



January 12, 1990



Construction of New KM Building Begins

Last month, our division broke ground for a new building at the Kearny Mesa facility which will serve as the Space Systems headquarters in San Diego.

The 200,000-square-foot, four-story building will occupy space now used for parking along Kearny Villa Road and will blend architecturally with the other buildings in the Kearny Mesa complex. The new structure, designated Building 24, will stand just west of Building 25.

The building is expected to house over 1,000 employees in various administrative departments, as well as the division's executive staff.

"More than just saving money, I think the real impact of this facility will be in accentuating the team work that this division is noted for by literally bringing us closer together," noted Marty Winkler, division vice president and deputy general manager, during his remarks at the ceremony.

Special features of the building include an atrium-like lobby opening to the second floor, a state-of-the-art auditorium and presentation center, and extensive landscaping around the

building and along Kearny Villa Road. Occupancy is scheduled for the first quarter of 1991.

Participating in the groundbreaking ceremony were Nielsen Construction Company, general contractor for the project, and Deems, Lewis, McKinley, architects.

SSIP Goes Automatic with DIAL System

Beginning with the new year, all SSIP transactions including withdrawals, loans, changes, applications, terminations and retirement information will be handled by you via phone, using an automated telephone response system: DIAL (Direct Information Access Line).

Due to this change, the Employee Benefits office will not be able to provide you with information regarding your Stock Savings and Investment Plan account. Also, SSIP change forms and applications will no longer be available.

It is imperative that you complete and return a DIAL receipt and agreement statement to activate your initial PIN (Personal Identification Number). Otherwise, you will not have access to your SSIP account.

If you are an SSIP participant and have not received a DIAL package, please obtain and mail a DIAL postcard (available at Employee Benefits) and a package will be sent to you.

Everyone's Invited to Dinner with Al

Space Systems State of the Division Address

Guest Speaker, Dr. Alan Lovelace

presenting a

"Retrospective of 1989 and A Look Ahead"

- also -

*Recognizing Department Employees of the Year and
Announcing the General Manager's Employee of the Year*

Thursday, January 25

Social Hour at 6 p.m., Dinner at 7 p.m.

Sheraton Harbor Island East

**Cost is \$12 for all employees and guests. Contact NMA Boosters for tickets
Table reservations, call 75577**

Space Systems Division

1990 Goals

Welcome to a new year and a new decade at Space Systems Division. In thinking back over the accomplishments of 1989, I congratulate each and every one of you for a job well done. Now, however, we must look toward the future and our goals for 1990.

Although our primary challenges center around selling, manufacturing, and launching our space launch systems, we must also focus on finding better ways of doing business. In today's competitive marketplace, it is especially important to strive toward achieving the highest quality while maintaining control over our costs.

1990 will be an exciting year, with delivery of the first Titan/Centaur vehicle and launch of the first commercial Atlas I. I look forward to working together to accomplish these and the other milestones set forth below.

In just a few short years, Space Systems has established itself as a leader in the space transportation industry, and with our continued hard work and dedication, 1990 is sure to be a success.



- Exceed satisfactory Contractor Performance Assessment Review rating (a self-assessed report card of our contractual performance on a quarterly basis) for Atlas and Titan/Centaur flight articles and Mission Integration
- Sell all open Atlas launch positions through 1993, with earnings margins and payment terms equal to or better than those assumed for the General Dynamics Board of Directors presentation last September
- Secure follow-on contract for additional Titan/Centaur vehicles and associated Mission Integration (proposal already submitted; announcement expected midyear)
- Control Atlas nonrecurring and recurring costs and achieve program indicated earnings rates
- Secure commitment for Atlas West Coast launch capability (establish Atlas/Centaur flights out of Vandenberg Air Force Base)
- Capture significant CRAD (Contracted Research and Development) awards
- Meet Manufacturing Resource Planning II implementation milestones
- Initiate a division-wide MRP II education program and achieve the required data accuracy levels
- Execute Total Quality Management implementation, creating an environment of open communication that enables each employee to continuously find better ways to do their job
- Achieve all affirmative action and EEO hiring goals and successfully conclude labor contract negotiations
- Demonstrate aggressive improvement in the area of cash management during 1990 and meet financial goals

1/12/90

Matching Gifts Guidelines Revised

One of the benefits offered to employees by General Dynamics, the Matching Gifts program, has gone through some revision to keep us in the mainstream of program administration following a national research survey.

Additions to the eligible groups list are: public TV and radio, conservation and urban preservation groups, and nonprofit groups with foreign operations and U.S. nonprofit tax status.

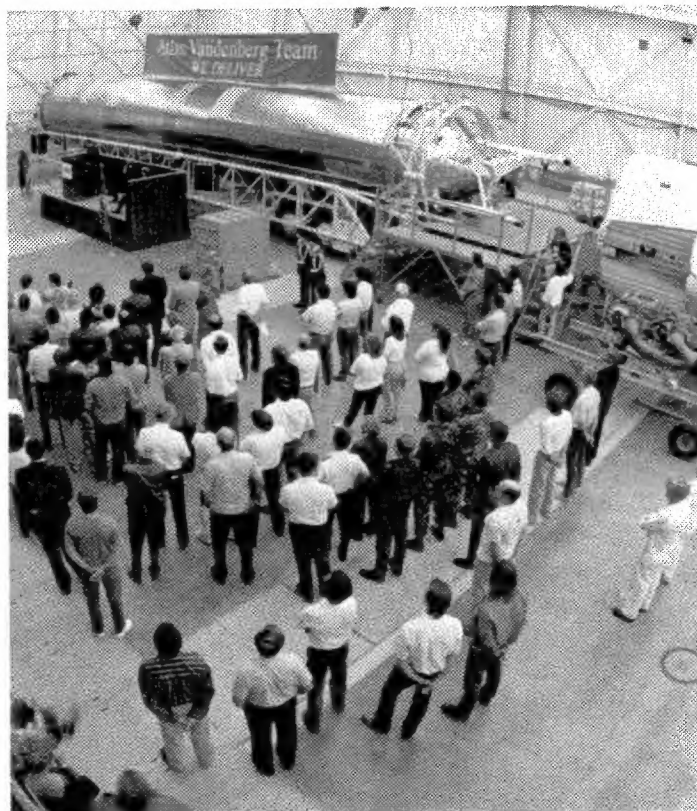
Retirees with ten years of General Dynamics service and employees with at least six months service are now eligible to participate. The minimum matching gift is increased to \$50, while the limit of \$5,000 remains the same.

Deletions to the eligible groups list include gifts of stock, hospitals (except for medical research organizations), elementary and secondary schools, and pooled charity events (such as walk-a-thons). Call 39274 for information or to obtain forms.

Promotions

Congratulations to these people who recently received promotions. The list includes all hourly, salaried and management support employees.

| | | |
|-----------------------|----------------------|----------------------|
| Sherry Adcock | Ken Frazier | Chris Oswald |
| Ken Allen | Jean Garde | Victor Pazdziesz |
| Charles Andrews | Ben Go | Scott Peck |
| Glenn Asperin | Mary Goetz | Garry Pistole |
| Michael Barbeau | Ann Goodwill | Clifford Prince, Jr. |
| Richard Bilodeau | Les Green | Diana Pryor |
| Peggy Bjorkman | Cheryl Guglielmo | Mike Ralph |
| John Borchert | Nancy Guthrie | Dave Ramsay |
| Emmett Brown | Donna Hamlett | Kathy Rodriguez |
| Lonnie Brown | Catherine Happersett | John Romero |
| Steve Brown | Paul Hawkins | Brad Rude |
| Deryl Browning | Elaine Heffernan | Tom Russell |
| Angel Bustos | Mark Henley | Donna Sandsmark |
| Mark Butkiewicz | Tom Henning | Paul Sannes |
| Renato Cabral | Richard Hilden | John Scherer |
| Patricia CalicoyGregg | Doug Hill | Elaine Schultz |
| Carstairs | Linda Hill | Vincent Sherrod |
| Christopher Cassell | Charlie Hodsdon | Dave Short |
| David Cates | David Hone | Donna Shull |
| Lai Chan | David Hurlbert | Marthe Smith |
| Carlson Chen | Richard Indorf | Brian Snow |
| Bruce Cline | Doris Ivanov | Joseph Stack, Jr. |
| Ian Collins | Camille Kahlert | Max Steele |
| Barbara Conner | Kyle Keath | Christopher Stemen |
| Frank Cowan | Dave Kerner | Ted Stern |
| Lane Cowgill | John Keyes | Patricia Stevens |
| Nancy Craft | Mike Kirksey | Keith Steward |
| Gayle Croft | Sandra Knight | Bob Supergan |
| Brian Croll | James Kramer | Laura Szalwinski |
| Pedro Cruz | Vicki Kuick | Karan Talada |
| Craig Cunningham | Otto Lee | Walter Tang |
| Dale Davidson | Slick Lindsey | Vicky Tudor |
| Cynthia Davis | Don Mareen | Victoria Ullrich |
| Mark Davis | Jean McCassey | Bertha Vasquez |
| Cora De Jesus | Dick McCool | Richard Walker |
| Bob De Libertis, Jr. | Patrick McNally | Jeff Warner |
| Dan De Saegher | Evelyn Mellum | Raymond Wegrzyn |
| Lucye Derrough | Marilyn Melton | Brian Wilhelm |
| Steven Douthat | Brian Merrill | Al Wilmot |
| Roger Dunn | Jane Money | Christopher Wilson |
| Frank Fang | Pat Moore | John Wineski |
| Steve Fitz | Sandy Mumma | Greg Wong |
| Renee Foiles | Peter Munoz | Joshua Wong |
| Bob Ford | Dimitri Netelbeek | Walt Zukowksi |
| Estelle Franklin | John O'Husky | |



Commercial Atlas Debuts at VAFB

An estimated 150 people last November attended the roll-in ceremony of General Dynamics' first commercial Atlas space launch vehicle to be assembled at Vandenberg Air Force Base.

Arrival of the Atlas tank from San Diego facilities marked a significant milestone as it solidifies our position as a dominant U. S. provider of commercial launch services.

"This represents the beginning of a long line of Atlas boosters that will go through final assembly here," said Chuck Harter, director of VAFB base operations. "Our team will also assemble the Atlas boosters for the U. S. Air Force Medium Launch Vehicle program."

Final assembly of the Atlas booster has begun. This involves mating the thrust section with the tank, installing the booster and sustainer engines, pneumatics and hydraulic systems, and assembling and installing the electrical systems.

The schedule calls for the Atlas to be shipped in February to Cape Canaveral Air Force Station. There, Atlas will be mated with the Centaur upper stage and the Combined Release and Radiation Effects Satellite (CRRES). The joint NASA and Department of Defense CRRES will lift off from Launch Complex 36B in June, 1990.

"While working on the commercial Atlas program is new," Harter said, "working on Atlas boosters by our team is not." He said that we have refurbished and launched Atlas E vehicles and maintained operations at VAFB since 1958.

"The Atlas has been one of the premiere workhorses of our space program," stated Colonel Orlando Severo, commander Western Space and Missile Center. "It takes dedicated and talented American companies like GD to be among the front-runners in moving our space program into the next century."

More than half of the 60 launch vehicles projected for the Atlas program are already committed.

Service Supplier of the Quarter Award Given to RUST

Space Systems presented its first-ever Service Supplier of the Quarter award. The recipient, RUST International, was recognized for their work on the Advanced Launch System.

RUST, headquartered in Birmingham, Alabama, is the chief subcontractor supporting us with conceptual design and project management for ALS.

In giving the award, Jeff Owens, purchasing agent for the ALS program, and Patti Higgins, manager of the supplier recognition program, recognized RUST's automated Intergraph facilities design system and the company's strong design team working in San Diego, which allows rapid response to the creative facilities design process.

RUST is a shining example of the high tech and cosmopolitan strength of the New South. We appreciate RUST's professional service, which contributes so much to our program.

New Idea May Soon Be Patented

Bob Baldi and Ed Johnson, both from the Energy Program, submitted their patent application to the U.S. government with the title "Laminated Conductor for High Current Coils and Method of Manufacture."

The purpose is to improve the producibility of high current coils. Novel features include tightly wound packs and overall improved manufacturing methods.

Essentially, the invention involves wrapping a layer of insulation around a rotatable and specially shaped mandrel, then adding several copper sheets over the insulation. Soldering is used to bond the cooling tubes and the copper sheets together. Finally, the entire coil conductor pack is placed in a force containment structure and plastic is injected to fill voids between the coil conductor pack and the structure.

Advantages of this new method include reduced expenses and manufacturing time.

Retirees

Thanks and good luck to these Space Systems employees who recently retired: **Maurice Baxter**, Engineering Specialist, Structures & Mechanical Systems, 5 years
Thomas Dow, Facilities Control Analyst, Cape Canaveral Air Force Station, 31 years

Kelly Loynes, Missile Specialist Senior, Cape Canaveral Air Force Station, 32 years

Billy Moye, Base Equipment Mechanic Senior, Vandenberg Air Force Station, 9 years

Cecil Norwood, Engineering Specialist, Quality Assurance, 34 years

Don Thatcher, Engineer, Quality Assurance, 3 years

Douglas Willett, Procurement Administrator, Material, 6 years

Minority Colleges Join in Technology Exchange Seminar

Six West Coast GD divisions sponsored a technology exchange seminar last year.

The seminar, which was the first of its kind held anywhere, was hosted by the Electronics Division. It provided an opportunity for key individuals of both the Historically Black Colleges and Universities (HBCU) and GD to meet and share information regarding capabilities, opportunities, and goals.

Representatives from the nine HBCUs (Florida A & M, Hampton, Howard, North Carolina, A & T State, Prairie View A & M, Southern, Tennessee State and the University of the District of Columbia) and the National Association for Equal Opportunity in Higher Education gave comprehensive presentations regarding their specific capabilities, experiences, and desire to be a part of the research and development efforts of GD.

General Dynamics provided information regarding recruitment efforts, potential equipment donations, and research and development projects.

Space Systems representatives were Sue Dehesa, Human Resources; Dr. Mike Felix, Research & Engineering; Alda Jorgenson, Ethics; Dan Little and Patty Pierson, Material; and Brett Vonder Reith, Facilities.

"And the lone rider saddled up his horse and rode off into the sunset. His work was done here. No longer an open, untamed land, new settlers and their families were making it home."



And so the story goes — in one of over 40 western and adventure novels written by Pat Andrews. His paperback books have also been published in Brazil, Holland, and the United Kingdom.

Pat comes from a family of writers. His background includes free lance writing, newspaper reporting, print shop work, and most recently, editor at Convair's Technical Publications.

He has served in the Kansas National Guard, the 82nd Airborne Division of the Regular Army, and the Army Reserves.

As the new editor for the Space Systems *Orbiter*, Pat will be responsible for reporting the way employees work together, to show the superior products they produce, and to share newsworthy information.

Welcome, Pat, to Space Systems — the real wild west.

—Linda Loffredo, Past Editor

Space Systems Division *Orbiter* is published every other Friday. Items of interest to readers should be addressed to *Orbiter*, Mail Zone 22-7000 (Post Office Box 85990, San Diego, CA 92138). Telephone (619) 573-9373

Reporters

Rita Jackson, CCAFS 853-7571

Lela Reddekopp, VAFB 866-9551

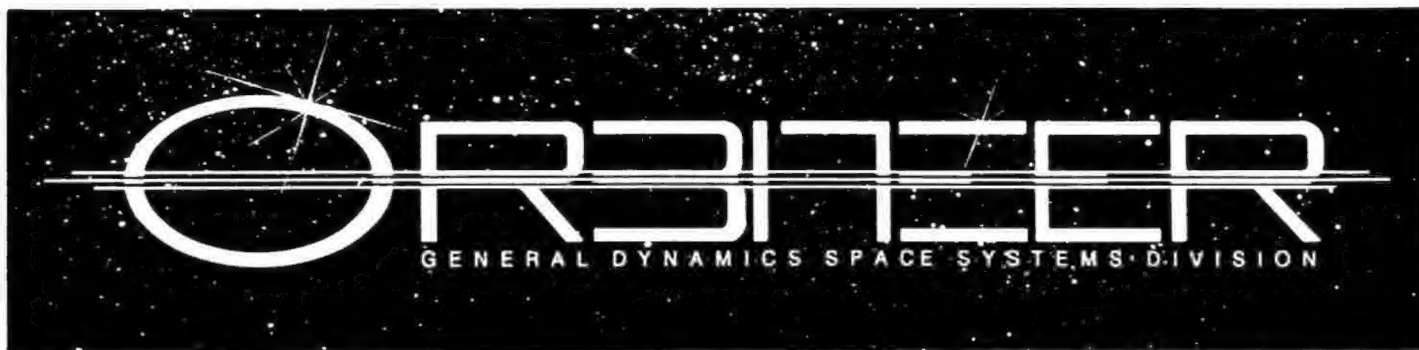
Camille Kahlert, Huntsville 880-0660

Patrick Andrews, Editor

ATTENTION, MANAGEMENT

SUPPORT: Just a reminder about the *Management Support Manual* available on EM/OS. The shared folder has "how to" instructions for several procedures and forms used within our division.

These instructions are easy to follow and are continuously updated. To access the shared folder in EM/OS, at the "EM" screen type "I" for index and hit return. Then type in [SS_MGTSUPPORT] and hit return. Call 75550 with questions.



February 9, 1990

EEO Coordinators Recognized at Awards Breakfast

The executive dining room at the Kearny Mesa cafeteria was the scene of a special awards breakfast on January 25. It was hosted by Fran Richardson, manager of the division's EEO/AAP (Equal Employment Opportunity/Affirmative Action) Program.

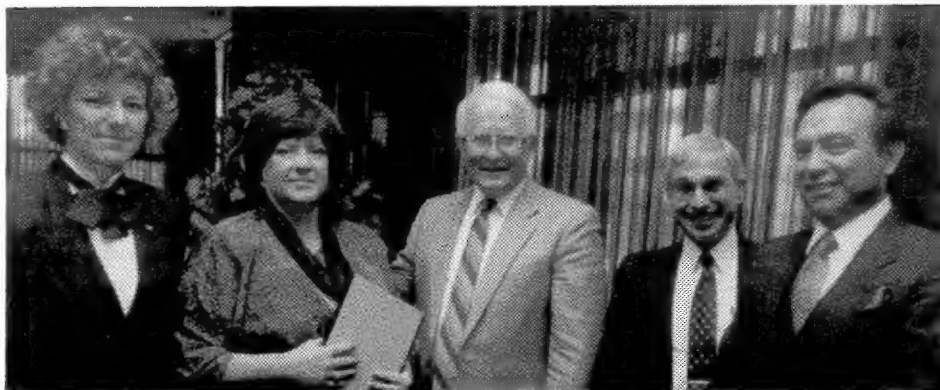
The event began with an address by Dr. Al Lovelace who emphasized Space Systems' commitment to EEO/AAP. He spoke of the teamwork environment between Space Systems, the corporation, and OFCCP (Office of Federal Contract Compliance Program) and the goals of a continued, vigorous implementation of EEO/AAP within the division.

Guest speaker, Al Padilla of the OFCCP, complimented General Dynamics on its program of equality in the workplace. He pointed out that corporate EEO/AAP goals and those of his office are the same. Mr. Padilla also emphasized that equal employment opportunities and affirmative action are inseparable and one is not possible without the other.

Award presentations followed Mr. Padilla's speech.

Special certificates were handed out to Bill Garcia, Titan/Centaur Program Office; Fred Rochez and Nancy Blaha, Facilities; Leo Springer and Roxanna Khan, Research & Engineering; Donna Lewis and Charissa Matsumori, Business Development; James Brown, Fran Richardson, Jill Moeller, Paul Watrous, and Karen Spanelli, Human Resources; Barbara Oliver and Steve Rambo, IRM & MRP II; Paula Parmentier and Leslie Kortopates, Finance; Patti Charney and Belinda Harris, Contracts & Estimating; Gwen Freeman and Donna Kaptain, Production; Ron Roberts and Janet Watson, Quality Assurance; Jim Cleghorn and Tim O'Leary, Material; and Gary Cono of the Atlas Program Office.

The session's closing statement was delivered by Bernie Kulchin, vice president of Human Resources, who stated, "Equal Employment Opportunity and Affirmative Action are linked to Total Quality Management because each has continuous improvement built into it."



Two of the award winners, Donna Kaptain and Gwen Freeman, on the left, are shown with Dr. Alan Lovelace; Bernie Kulchin, vice president of Human Resources; and Al Padilla of the Office of Federal Contract Compliance.

Black History Week Lunches Scheduled

A series of brown bag lunches in honor of Black History Week has been scheduled for the week of February 19 - 23. The events will be capped on Friday, February 23 with a social mixer at 4:00 in the CRA indoor pavilion.

The lunches will be held from 11:30 a.m. to 12:30 p.m. in the Titan/Centaur MIC Room in CP2. Although sponsored by the NMA, all employees are urged to attend what is hoped to become an annual event. Registration is free.

The schedule of events is as follows:

Monday, February 19 — Regina Petty, J.D., Attorney-at-Law, will speak on the topic of *Increasing Large Corporations' Use of Minority Subcontractors*, addressing her own experiences as a black female attorney.

Wednesday, February 20 — Fran Richardson, manager of EEO/AAP, will speak on *Equal Opportunity Employment Issues in the 90's*.

Friday, February 23 — Tom Gayton, J.D., a civil rights attorney, will discuss *Civil Rights in the Workplace — Employment Discrimination Laws and Litigation*.

During the social mixer, Vernon Sukumo, executive director of the Black Federation and a long-time social activist, will provide a brief keynote address and facilitate a discussion on contributions blacks have made in American history. The Second Baptist Church Inspirational Choir from Oceanside will provide entertainment. This group received rave reviews for their excellent performances in local Martin Luther King birthday celebrations. Also, work by local black artists will be featured. Refreshment will be provided.

For more information contact Catherine Hogan at 67301 or Fran Richardson at 39222.

Training Seminars Cover Launch History at CCAFS

There is an old saying that goes something like this:

A determined person learns from experience — a wise person learns from the experience of others.

That adage has been put into effect at CCAFS. Last year, over 40% of GD employees there had less than three years of service with Space Systems. The launch of Atlas/Centaur 68 was the first launch experience for many. This brought up the question, "How can 33 years of launch experience be shared with these employees?"

The answer was found in teaming experienced and new employees together, then having the vets accept the challenge of teaching what they know to others. But last week, the new folks were given a different opportunity to learn from our past launch history.

Karl Kachigan of the Analex Corporation, gave a two-hour presentation to engineering personnel entitled: *Is It Go, Baby, Go! Or Go... Maybe...?*

The program covered the entire Atlas/Centaur and Titan/Centaur history and focused on the lessons learned from launch failures. Karl also included wisdom learned during his successful career along with technical information.

Karl began his career with GD immediately after graduation from Marquette University in 1952. He worked on the Atlas ICBM in San Diego. He was present at the first launch at CCAFS in 1957 when he was responsible for control dynamics for the Atlas. He has witnessed over one hundred Atlas launches on both the east and west coasts.

When Karl left General Dynamics in 1983, he was director of engineering for Launch Vehicle programs. He began working as a consultant at that time and is currently responsible for independent verification and validation of commercial launches for Analex Corporation.

1989 Cost Reduction Efforts Reach Almost \$91 Million in Savings

The combined estimated savings through the Cost Reduction Proposal (CRP) program and the Employee Suggestion (ES) program at Space Systems came to a grand total of \$90,840,000 for 1989.

"This amount graphically shows that efforts devoted to new and better ways to accomplish tasks are alive and well in Space Systems Division," said Dennis Bartlett, administrator of Motivational Programs.

The CRP program had 404 participants with all ideas implemented. CRP ideas are always associated with the participants' jobs, and the savings is determined after the idea is implemented. These employees receive merchandise awards and award certificates.

Two hundred eighty three ES's totaling over \$100,000 were implemented and approved for awards. If their ideas were either outside their job assignments or hadn't been the subject of a management study or had not yet been implemented within our division, they were eligible for cash awards. ES awards range from \$50 up to \$10,000.

"The key to this successful program is employee participation," said Bernie Kulchin, vice president of Human Resources. He encourages all employees to be on the lookout for better ways to do their jobs in 1990.

Share What You Do Best Through the United Way Volunteer Center

Give the best gift of all — yourself. Here are some volunteer opportunities for you during the month of February:

Video camera person/editor to produce a new video to highlight volunteers for the Interfaith Shelter Network homeless program. Use pre-existing video and new footage. Downtown San Diego.

Delivery volunteers to pick up meals at Valley Grove Senior Center and deliver to shut-ins in Lemon Grove and Spring Valley.

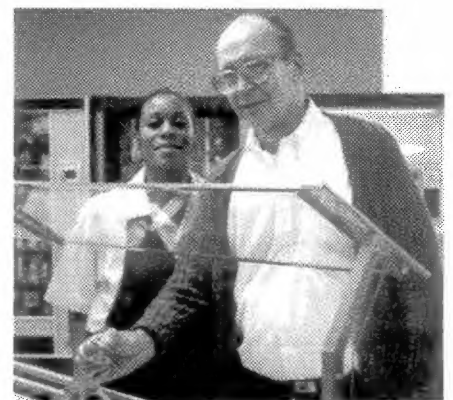
Recreation/sports enthusiasts to take board and care patients on outings such as fishing, swimming, camping, or hiking. Program sponsored by the Volunteers of America.

Computer lab assistant to assist Project Read teacher with weekly evening class for adult literacy students. Will train. Classes held at the National City Library.

Health screening volunteers who are bilingual (Spanish/English) to conduct health screening in the San Ysidro area for Project Salsa.

The United Way Volunteer Center has other opportunities throughout the county at various days and times. Call the UWVC at 492-2121, or contact our Space Systems Community Relations Office at 77447.

New Cafeteria Is Popular with the CP Lunch Bunch



Bill Jaynes of Systems Engineering, (left photo) pays cashier Betty Salamy for his meal in the new cafeteria installed in CP3. In the right photo, Gene Mileur of Commercial Mass Properties, gets salad-making advice from cafeteria worker Paula Lowe. Between 200 and 250 people a day use the facility which was opened in January.

Promotions

Congratulations to these people who recently received promotions. The list includes all hourly, salaried, and management support employees.

Randy Abeyta
Dale Balu
Dick Bensinger
Steve Blahnik
Richard Clark
Marsha Dale
Elizabeth Davis
James Degan
Michael Follmuth
Dave Foxx
Gwen Freeman
Janet Goforth
David Gottfredson
Lisa Grosse
John Haag
Ronald Hansen
Olivia Hill
Mark Hurd
Thomas Hussmann
Richard Johnston
Diana Jordan
Michael A. Kelley

Bob Kennie
Doug King
Bill Kittle
Kenneth Koba
Scott Krueger
George La Combe
Irene Lara
Tim Larson
Brian Lindgren
David Mattingly
Harold McAvenia
Timothy McCarthy
David McLaughlin
Margaret Miller
Allan Montefelt
James Mulkey
Jim Murray
Enrique Naputi
Vern Owara
Julie Pashkowsky
Rekha Patel
Dave Pearce

Doreen Pohl
Davetta Red
Kelly Reed
Mike Reformat
Ricardo Reyes
Ray Ross
Kathleen Rusnic
Bob Sanders
David Sandsmark
Doug Seaton
Mitsuyuki Soto
Mike Stitt
James Stevens
Keith Stribling
Stu Sutherland
Stephanie Tran
Morgan Whale
Anne Wolff
William Woodward
Gloria Wright
Will Young

DCAS Is Slated to Be Changed to DCMC

Defense Contract Administrative Service (DCAS) will undergo a name and organizational change effective this month, according to Captain Leonard Vincent, regional commander of DCAS.

The new title of the organization will be Defense Contract Management Command (DCMC).

A reduction from nine regions down to five districts will also be part of the change. The district headquarters will be located in Boston, Philadelphia, Atlanta, and Chicago. The Western District's headquarters' location has yet to be determined, but there is a strong possibility it will be placed on an existing military reservation.

Captain Vincent stated that this is a positive step in an atmosphere created by a shrinking defense budget. He also said that the changes should not affect General Dynamics' activities to a great extent.



Is Here!

Opportunity — Challenge — Innovation.

These are the promises facing our division as we prepare for Manufacturing Resource Planning II (MRPII) implementation.

The December 15 *Orbiteer* announced the kick-off of the MRP II project. Since then, we have purchased and installed the MAC-PAC/D computer software that will be the primary tool for MRP II. MAC-PAC/D is a highly integrated, state-of-the-art computer system that provides superior functions for the key areas of configuration

management, procurement, and material planning. It is now loaded in a test mode on the Western Center IBM mainframe and is being used by MRP II project team members for test purposes and training.

Current MRP II team activity consists of Conference Room Pilot preparation. A Conference Room Pilot is not a washed-up airline pilot, as the name might imply. It's a critical process in the MRP II implementation strategy. The project team will define how Space Systems can best implement the MRP II philosophy.

The Conference Room Pilot enables the project team to become familiar with the MAC-PAC/D software features and functions. The team will review current policies and procedures and identify methods to improve operations in the new environment. Finally, they will develop a detailed, step-by-step approach

to making MRP II a part of life at General Dynamics Space Systems.

As we reported in December, MRP II affects the entire division. This development requires participation and coordination of all departments and disciplines. The rewards are great and are measured in improved communications, cooperation, and unity as well as in improved division performance.

MRP II is one more way in which GD remains not only a strong survivor in a changing business environment, but a leader. We have identified an *opportunity*, accepted a *challenge*, and created *innovation* to move ahead of our competitors now and into the future.

MRP II is no longer just a concept and a promise. It is here!

We will continue to keep you informed of project activities in future *Orbiteers*.

Cape Canaveral Names Employees of the Year

Ceremonies for Space Systems' Cape Canaveral Employees of the Year and Base Director's Award were held on Friday, January 18. Ben Wier, division vice president and program director of Atlas programs, was at CCAFS to congratulate the winners.

Nominees from each function were announced by base operations staff members. Each nominee received a plaque and a merchandise award.

Nominees and their contributions were:

Frances James, of Human Resources, hired the needed employees for Cape operations.

Jim Burke led a team of novice systems engineers through launch preparations for Atlas/Centaur 68.

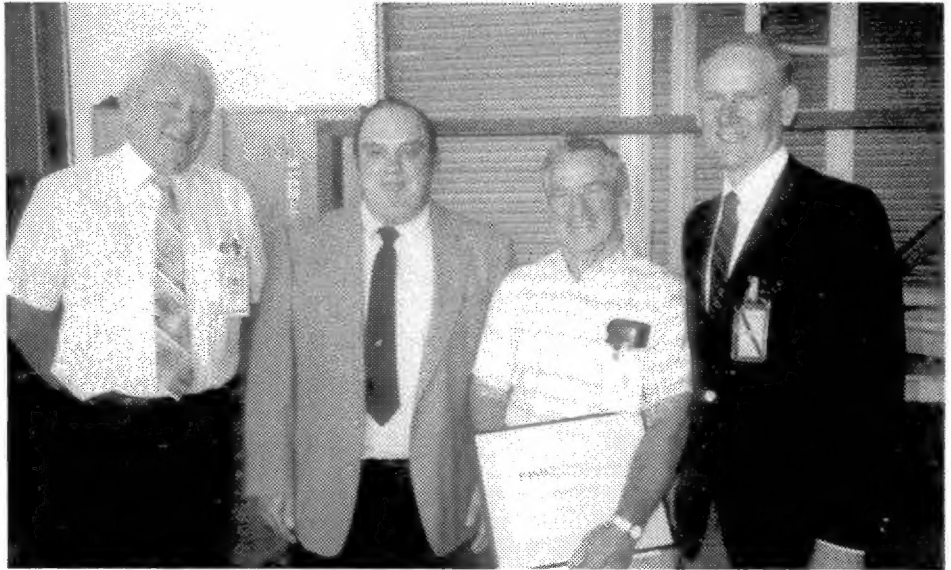
Bill Trudeau oversaw sub-contractor performance on Launch Complex 36A refurbishment for Quality Assurance.

Ed Patterson, in charge of the second shift in the Machine Shop, improved communications between first and second shift workers.

Bob Tucker, of Design Services, guided and inspired his team to match priorities and resources for an outstanding output of engineering services.

Anne Tillis filled a dual role as Titan/Centaur S/CSCS administrator and procedure coordinator in a way that satisfied customers both in her home department and in San Diego.

Jerry Leonard was the winner of the Base Director's Employee of the Year Award for CCAFS. Jerry's nomination cited his ability to use praise, encouragement, goals, and feedback with less experienced personnel as he assisted them in learning about the tasks of a launch service mechanic in the Centaur Propulsion area. He has also used his experience to provide various suggestions which the company has been able to utilize. Jerry's affable and stable performance style contribute to the company's aim of a demonstrated team effort within the total work force.



Jerry Leonard, senior launch service mechanic, was named CCAFS Employee of the Year at ceremonies on January 18. Pictured after the award ceremony are, left to right, Jack Dean, chief of site support; Frank Watkins, director of base operations; Jerry Leonard; and Ben Wier, division vice president and director of the Atlas Program.

Division Photogs Shine

Space Systems entries in the *GD World's* photo contest earned an overall first place with 10 out of 62 entries garnering awards. This was an outstanding showing in a competition that was loaded with a total of 715 photographers vying for honors.

The competition, characterized as "absolutely first class," was so keen that one of the judges described choosing the winners "like trying to make a selection from a room full of \$100 bills."

Space Systems' Chris Cassell and Jim Nugent were among the dozen first place winners.

Those qualifying as runners up were Lance Carter, David Caudle, Mike Gruszczynski, Cary Johnson, Kevin Keierleber, Mike Paris, Ed Passi, and Mai Quan Vinh.

The first place winners were awarded \$200 U.S. savings bonds and the runners-up received \$100 bonds. All entries received certificates. The contest is to be an annual event conducted by the Corporate Communications Department.

Space Systems employment for the week ending January 26, 1990, was 4,921.

Workshop Scheduled on Aging Parents

Employee Benefits has announced a workshop entitled: *You and Your Aging Parents*, which will begin February 27.

The session, scheduled from 4:45 to 6:00 p.m. in Meeting Room "C" at the Kearny Mesa CRA Clubhouse, will be conducted by Dr. Helen Hageboeck, a PhD in gerontology and health services.

For more information, call Ellen Mathews of Employee Benefits at 39915.

The Orbiteer

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Orbiteer
P.O. Box 85990, MZ 22-7000
San Diego, CA 92138

Patrick Andrews, Editor
(619) 573-9373

Rita Jackson, Reporter
CCAFS, (407) 853-7571

Camille Kahlert, Reporter
Huntsville, (205) 880-0660

Lela Reddekopp, Reporter
VAFB, (805) 866-9556



February 23, 1990

Check Given to Space Camp for Scholarships as a Memorial to William G. Phillipp

Jan Phillipp, widow of Space Systems' Bill Phillipp, presented a ceremonial check in the amount of \$20,000 to Edward O. Buckbee, director of the Space and Rocket Center and founder of U.S. Space Camp®. The amount, given in Bill's memory, represented the funding for 1989 and 1990 — 10 scholarships at \$1,000 each for two years.

The presentation was in actuality a press conference and was staged with the Space Camp Training Center in the background. The training center contains various hardware and simulators for students to experiment with, including simulated mission control panels, shuttle cockpits, and microgravity and moonwalk simulators.

When Jan presented the check she stated, "I am very proud to be here on Bill's behalf. If he were here, he would say that being honored for his career

accomplishments was all due to a team effort, just like the space program, and just like you are teaching the students at Space Camp."

Jan was assisted by Dr. Alan Lovelace, Space Systems general manager, who said, "Today we honor the memory of a man who exemplifies all the fine people who have kept America a leader in space over the last 30 years. Bill Phillipp had all the right stuff. He was dedicated to his family, his country, and his profession. Above all, he was a man of commitment — the kind of commitment that was so important in the early days of the Atlas program, when its revolutionary technology was being tested."

Also in attendance was Bill's brother Tom Phillipp of Space Systems, who is manager of systems effectiveness in Quality Assurance.

Scholarships Available for Space Camp

A total of 14 scholarships to attend U.S. Space Camp® at Huntsville, Alabama has been made available to children of Space Systems employees.

These scholarships are being made as a memorial to William G. Phillipp, an executive with Space Systems who passed away in 1989 following complications from heart surgery. All of Bill's career was spent in San Diego or Cape Canaveral Air Force Station as he moved up the ladder, serving finally as the vice president of Medium Launch Systems. A distinguished and key leader of space-related programs for 33 years, he helped develop the Atlas missile when it was in its infancy in the 1950s.

The William G. Phillipp Memorial Scholarship is a full tuition scholarship. For U.S. Space Camp® trainees, it also includes the cost of transportation, flightsuit, and team video. Scholarships for Academy Level II include transportation cost only.

There will be two scholarships available at Vandenberg. For applications contact Dick Neal's office, 866-6292; two at Cape Canaveral, contact Jerry William's office, 853-5885; two at Huntsville, contact George Philyaw at 883-3301; and eight at San Diego, call community relations at 39274.

In addition, six more scholarships are being made available for minority and disadvantaged students at Space Systems' partners-in-education, Knox Elementary and Hilltop High School in San Diego.

All scholarship applications will be sent to U.S. Space Camp®. The camp scholarship committee will make the final decision on all applications.

Deadline for scholarship applications is June 1. Each camp session will run every week from Sunday through Friday until the end of September.



Shown with the ceremonial check donated to U.S. Space Camp® as a memorial to Bill Phillipp are (left to right) George Philyaw, manager of Space Systems' Huntsville facility; Alda Jorgenson of division community relations; Jan Phillipp; and Tom Phillipp.



Scott Crist, Convair's manager of audiovisual communications, gives an orientation to Space Systems personnel on the video conferencing system in Building 4.

EEO Is a Never Ending Process in GDSS

Space Systems Division's commitment to Equal Employment Opportunity and Affirmative Action is reaffirmed every business day of the year.

This position was emphasized by Fran Richardson, manager of the division's EEO/AAP programs, when she stated, "Space Systems is strongly committed to a work environment free from any kind of discrimination. The EEO/AAP staff serves as a consultant to all employees in the area of Equal Employment and Affirmative Action. They identify problems and resolve complaints of discrimination based on sex, age, race, religion, handicap, or veteran status."

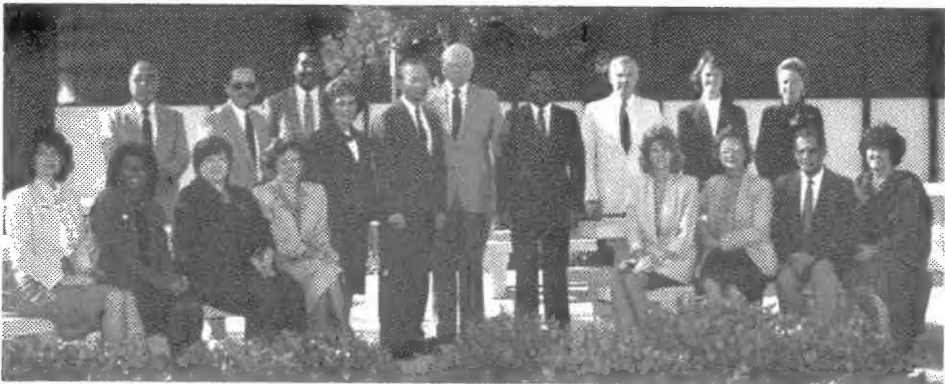
Employees can contact the EEO/AAP office at any time in complete confidentiality and with no fear of retaliation. Their concerns will be investigated and they will be informed of

the results of the investigation.

Employees are encouraged to first contact their supervisor to resolve problems or issues at hand. If the employee doesn't feel the problem has been satisfactorily resolved, issues can be taken to the next management level — in fact, all the way to the vice president of Human Resources if necessary.

It is with the able assistance of the EEO/AAP Committee that policy information is disseminated throughout the division.

Fran Richardson's permanent staff is made up of James Brown, Jr. and Karen Spanelli. EEO/AAP staff personnel can be reached at extensions 39222, 77888, or 39365. Employees may also stop by their office at any time on the second floor of Building 26, Column E-17, at Kearny Mesa.



Members of Space Systems' committee on Equal Opportunity and Affirmative Action pose for their picture following one of their frequent sessions addressing the on-going process of EEO/AAP in the division.

Network Brings Videoconferencing to Space Systems

In the past, for a busy Space Systems executive to attend a presentation in St. Louis or Fort Worth meant time away from the office. There was also the added expense of travel, lodging, food, and car rental. However, communication has entered the 90's and now the same presentations can be given to both locations simultaneously, without ever leaving San Diego. The General Dynamics Videoconferencing Network (GDVN) makes it possible.

GDVN, a state-of-the-art conference room, can link two to three locations at once allowing participants to see and hear each other while conducting meetings, seminars, or training sessions. GDVN has many benefits including increased speed in information flow, expediting problem resolution, and, of course, reducing that nonproductive travel time and expense.

Located in Building 4, GDVN houses three 35-inch screen televisions — two screens display the participants from the other locations and the third is used for visual aids. Six 13-inch monitors are located on the conference tables for displaying graphics. The technologically advanced system allows for clear audio transmission at a conversational level of discussion.

The room is available for use by all General Dynamics employees. Operating hours are 24 hours a day, seven days a week on a first come, first served basis. Presently it is utilized less than 10% of the available time. Besides San Diego, GDVN is operating at four other General Dynamics locations including Washington, D.C., St. Louis, Fort Worth, and Pomona.

US Sprint Meeting Channel makes the connections possible and meetings can be arranged with any company using the system. Check listing in EM/OS shared file [CV_ VIDEOCONF].

GDVN protects General Dynamics private information but government classified information is prohibited from being communicated over the network.

For more information or a demonstration, contact Kayanne Edmonds at extension 38757.

The Space Systems Child Care Resource Center Is
Sponsoring a Brown Bag Lunch Presentation:

CHILD SAFE / INJURY PREVENTION

Monday, March 5, 1990

RTDS Conference Room, Building 26

Kearny Mesa

Session I — 11:00 - 11:30

Session II — 11:30 - 12:30

Presented by

Hartson-City of San Diego Paramedic Services

Paramedics will provide valuable information
on five leading risk areas for childhood injury

- TRAFFIC ACCIDENTS •
- BURNS AND SCALDS •
- FALLS •
- DROWNING •
- CHOKING AND POISONING •
- LEARNING THE PROPER PROCESS OF 911 •

Brochures and Medical Information Packets will be made available at no charge.

CALL SUSI COWAN x38979 FOR DETAILS

Titan/Centaur Progress Continues

T/C-8 continues through Final Assembly with both Final Assembly and some checkout tasks proceeding concurrently to expedite moving the vehicle to the Thermal Acoustic Test Facility. T/C-8 is scheduled to be ready for delivery to the launch site on May 7.

T/C-9 completed Major Weld and is finishing Wash Station. It is to be moved to Kearny Mesa next week. T/C-10 has started Major Weld; all required Major Weld items are staged and ready.

The Structural Test Tank was cut apart; the middle skin section was removed and a new section installed utilizing a new Skate Welder System developed for this repair. After completion at Plant 19 in early March, the tank will be processed through Kearny Mesa and returned to Sycamore Canyon for completion of Structural Tests.

The Titan/Centaur Software Integration Tasks are underway with a CCAFS Team in San Diego to perform validation/integration tasks. The task will perform checkout procedures using ground control software developed in the Kearny Mesa Systems Integration Lab; the Prototype Equipment Module will be utilized as the simulated functioning vehicle element. The resultant software-procedure products will be used at CCAFS for processing Titan/Centaur vehicles from test through launch.

Electrical and Mechanical Checkout Equipment previously validated is being utilized for T/C-8 checkout in the Final Assembly Area. Final installation and preliminary checks are underway on similar equipment in the TATF.

Qualification testing was successfully completed at Honeywell on the Inertial Measurement Group and at Gulton on the Block I Data Acquisition System. Both subcontractors have delivered their first production units for T/C-8 and GDE has delivered all of the T/C-8 Avionics Boxes. This completes major hardware deliveries for T/C-8.

GDSC Harlingen has delivered the T/C-9 and T/C-10 Aft Adapters. The first Forward Adapter built by Harlingen is complete and ready for shipment to San Diego to support T/C-9.

Dr. Lovelace Conducts Indian Visitors on Tour



Dr. Alan Lovelace, Space Systems general manager, escorts Professor U. R. Rao, Mr. Shri N. Pant, and Mr. V. Thomas from the Indian Space Research Organization of the Indian government through the Centaur assembly Clean room during a tour on January 25. The Indians are considering Atlas/Centaur for the launch of the INSAT II C&D satellites.

Employee Assistance Program Completes First Year, Poised for the Future

By Michael Felchlin

The Employee Assistance Program (EAP) just completed its first year of operation. The program's utilization rate of 6.5% represents a positive sign of initial acceptance by Space Systems employees and their family members, and it is well within the range of national norms for EAPs.

The EAP is structured to provide brief counseling for a number of personal problems. This year employees and their family members consulted with the EAP regarding:

- Family and/or parenting problems
- Drug or alcohol problems
- Marital conflict
- Personal/psychological problems
- Legal or financial problems
- Career or work-related concerns

Both hourly and salaried employees used the program. Most persons using the

program were self-referred, although some were referred by their supervisor, medical department, or union representative. The majority of people were able to resolve their problem within the EAP in 3 to 4 sessions. When long-term or more specialized resources were necessary, the Employee Assistance consultant referred the person to a resource within the community that had been screened for both quality of service and reasonableness of fees.

When a problem begins to interfere in your personal as well as professional life, an EAP consultation can provide you with a treatment alternative designed to avoid a long and expensive period of recovery that might occur when seeking help on your own.

The EAP services are managed by National Resource Consultants, Inc. (NRC). They provide services at no cost in a private and confidential manner outside the workplace. If an outside

referral is recommended, NRC consultants will review your available health plan benefits and provide guidance to the highest quality providers available within the community. You can contact NRC for EAP services at 291-0330 in San Diego or 1-800-999-7222 in all other areas. These numbers are available to you 24 hours a day for emergency or urgent situations. You may also contact your on-site EAP Administrator, Michael Felchlin, at extension 68880 for additional information.

Employees are Space Systems' most valuable resource. To support our employees during times of personal conflict, the Employee Assistance Program continues to exist in order that an employee in need of assistance has the opportunity to receive it. With the progress made last year, the EAP looks forward to providing the entire spectrum of assistance to all employees and family members.

Brown Bag Lunches to "Check the Competition"

Have you ever wondered who our competitors are and what they are doing? A group of engineers has organized a series of brown bag seminars to look into that question.

The seminars will cover current launch vehicles, their designs, capabilities, and up-coming launches. The first seminar will cover the Atlas vehicle and will be held in the CP4 MIC room, 2nd floor at 11:30 a.m. on Friday, March 2, 1990.

The presenter will be Ed Lambert from Structural Design. Ed has been with General Dynamics for eight years and has been involved with many design aspects of the Atlas launch vehicle family.

Subsequent seminars will be held on a monthly basis and will cover other vehicles such as Ariane, Titan, and Delta. For further information contact Terri Charles at extension 78931 or Debra Kimberling at extension 77203.

John Burgeson Receives NASA Award

Huntsville's John Burgeson has received notification from NASA that his latest invention has been selected for the Space Act Tech Brief Award by the agency's Inventions and Contributions Board.

John was given a \$150 check, a certificate, and his invention has been proposed for publication in the NASA *Tech Brief* magazine.

John's invention is titled *Lightweight Composite Tank Structure for Cryogenic Applications*. Its purpose is to provide an improved tank structure for holding cryogenic fuels. The novel feature is the use of Spectra 1000 fibers in the construction, in combination with a metal foil liner. When cooled, the Spectra 1000 produces a uniform load on the metal foil liner, keeping it firmly in contact with the tank structure. The advantage is having a liner that will not pull away from the graphite/epoxy tank structure.

Congratulations to John for an outstanding accomplishment and contribution to the industry.

The *Orbiteer*

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San Diego, CA 92138

Patrick Andrews, Editor
(619) 573-9373

Rita Jackson, Reporter
CCAFS, (407) 853-7571

Camille Kahlert, Reporter
Huntsville, (205) 880-0660

Lela Reddekopp, Reporter
VAFB, (805) 866-9556

Space Systems employment for the week ending February 10, 1990 was 4,885.



March 9, 1990

Space Camp Offers Excitement and Challenges

Editor's Note: Since the article on scholarships for Space Camp appeared in the last issue of the Orbiter, several phone calls have come in regarding the curriculum at Space Camp. The following should answer any questions you have.

U.S. Space Camp and U.S. Space Academy use the excitement of the space program to motivate young people to continue their studies in math and science throughout their formal education.

Through hands-on exercises, computer lessons and lectures, trainees are

encouraged to explore their potential as future engineers, astronauts, scientists, and educators.

Since its inception in 1982, the U.S. Space Camp program has grown dramatically to include more programs, a longer season, and a larger audience. Growth has gone beyond the addition of new programs and increased availability; a satellite campus in Titusville, Florida was created in 1988 to satisfy public demand. U.S. Space Camp's attraction is

not regional in nature with trainees hailing from all 50 states and 30 other countries and U.S. possessions.

Interest on an international basis led the U.S. Space Camp Foundation to issue a license for the creation of Space Camp Japan which will open this year in Kitakyushu.

Youth programs offered at the Huntsville campus include a week-long program for young people in grades 4 through 6. Each day of instruction begins with an interactive computer lesson in the topic of the day, such as rockets, propulsion, or microgravity.

Astronaut training in microgravity and disorientation devices, underwater assembly of space hardware, model rocket launch, and mission training round out the trainees' week.

U.S. Space Academy I is a week-long program for grades 7 through 9. The program for Level I focuses on individual achievement leading to team work. It also increases the intensity of academic study and astronaut/mission training. Trainees spend two days in missions, reversing roles on the ground and in space.

U.S. Space Academy II is a college accredited, 10-day program which emphasizes the academic foundation for space-related careers. Level II is structured for advanced studies in astronaut training activities and living and working in space.

Scholarships to attend either phase of this exciting program are available as announced in the previous edition of the *Orbiter*. Call 866-6292 at Vandenberg AFB, 853-5885 at Cape Canaveral AFS, 883-3301 at Huntsville, or extension 39274 in San Diego for further information.



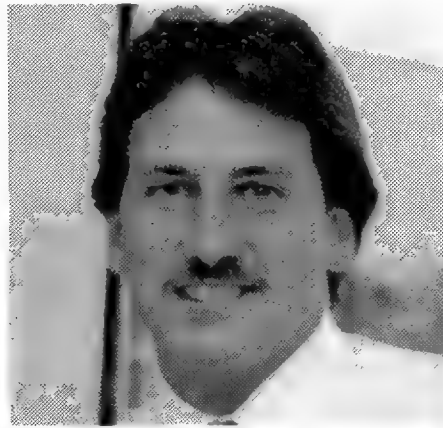
13-year-old Kristen Brilhante from Kamuela, Hawaii, demonstrates the manned maneuvering unit used in the camp's program for Edward O. Buckbee, director of the Space and Rocket Center and founder of U.S. Space Camp; Dr. Alan Lovelace, general manager of Space Systems Division; Jan Phillipp, widow of Bill Phillipp in whose name a program of memorial scholarships to attend the camp has been established; and George Beason, chairman of the Alabama Space Science Commission.

The purpose of the Space Systems Division *Orbiter* is to report the way employees — like Mike Daley, senior engineer — work together, to show the superior products they produce, and to share newsworthy information about events affecting us.

Quiet, reserved, humble, Mike is a graduate of Rensselaer Polytechnic Institute of Troy, New York (better known as RPI) with a B.S. degree in materials engineering. He began in the metallurgy lab analyzing failed parts of cruise missiles and Atlas vehicles. He tried to determine the reason for the part failure. Currently, he supports the designers of Atlas missiles. He is responsible for reviewing and approving material to be used for the programs. His specialty is metals (e.g., aluminum and stainless steel), although he has had experience working with non-metals, tapes, and adhesives.

Mike, a member of the Materials and Processes group, enjoys the large variety of tasks and skills it takes to do the job.

Mike loves the Padres and is frequent denizen of the Comedy Store in Mission Beach. He is a member of the GD sailing club, plays volleyball, and competes in a city softball team named "Still Undecided."



Mike Daley

Submissions Wanted For the *Orbiter*

Stories and photos of general interest are always welcome from the readership. If you have any ideas and aren't sure if they are right for the newsletter, call Patrick Andrews at extension 39373 or send a note to him at mail zone 22-7000.

If the actual writing of an article makes you nervous, don't worry. We have forms we can send you in which you answer a few questions pertaining to the who, what, where, and why of your story idea. We can fill in the rest and compose the article for you. This form also can be requested from Pat Andrews.

Photographs are always a good part of any story. Black and white photos are preferable because those published in the *Orbiter* are made into halftones for the printing process. A halftone is a picture broken down into a fine dot pattern that the eye detects as various shades from complete blacks to whites. This process is necessary because printing presses cannot lay down varying densities of ink. If the only photograph you have available is color, however, it is acceptable but will be a bit lacking in quality when it is reproduced.

So let's hear from you potential journalists out there.

Teaching Excellence Grants Available

As part of an on-going program to recognize the many contributions elementary and secondary school teachers make to improve the quality of life in the communities in which they teach, General Dynamics has established a program to enhance teaching excellence through a Corporate-sponsored grants award program.

The Teaching Excellence Grants Program has been developed to augment funds available to teachers in order to provide classroom or laboratory materials, teaching aids, or field trips for which funds are otherwise not available.

These grants, ranging from \$200 to \$1,000, are given annually to deserving teachers for classroom programs to promote personal and educational excellence.

For more information, contact community relations at 39274 in San Diego. At Vandenberg call 866-6292, at Cape Canaveral 853-5885, and phone 883-3301 at Hunstville.



Second Annual Sock Hop Will Be March 23

Elvis lives!

That's the theme of Space Systems' Second Annual Sock Hop that will be happening at the Sheraton Harbor Island East on Friday evening, March 23.

Hosted by Human Resources vice president Bernie "The Big Bopper" Kulchin, the social hour starts at 6:00 p.m. and dinner will be served at 7:00.

The evening's activities will feature an All-You-Can-Eat '50s buffet, Make-Your-Own-Sundae bar, scholarship prizes, a stroll contest, limbo, hula-hoop contest, and vintage automobiles on display.

Music will be vintage rock and roll played on a Wurlitzer jukebox and by the Cat-illacs band.

A limited number of rooms have been reserved at the hotel at a cost of \$80. Make your room reservations as quickly as possible to qualify for this discount rate. This is First-Come-First-Served.

Contact your nearest NMA booster for tickets and information today. And don't forget —

Elvis lives!

CRA Players Turn Their Talents to Mystery

Experience the suspense of the stage production of *Night Watch*, a play by Lucille Fletcher, when the CRA Players present it at the CRA Clubhouse March 16, 17, 18, 23, 24, and 25.

The story begins early one dark February morning when Elaine Wheeler makes some startling observations from her sitting room. Her sightings concern the old, abandoned tenement to the rear of her elegant, remodeled townhouse in mid-Manhattan.

Was the old man she saw dead? Did he really exist? Or are her husband, friend, neighbors — and the police — right in thinking she's slipped over the edge.

Space Systems is represented in the play by Karen Robinson, who plays the lead, and Jim Bushway in the supporting role of Vanelli.

Times of the performance are 8:00 p.m. on Fridays and Saturdays. Sunday matinees begin at 2:00 p.m. Tickets are \$5.00 each.

Production Division Leads in Suggestions

The Production Division submitted the greatest number of employee suggestions to Space Systems' Employee Suggestion (ES) program in 1989.

Following the commitment placed on the ES program by production vice president Ed Squires, members of the department were active participants in the program. This was done by members of two Production ES committees who aggressively administered the program. Without them, the project's success would not have been possible.

In June 1989 when it became apparent there was a significant backlog of open production-related employee suggestions, the production team rose to the challenge to reduce this backlog. Production's administration department baselined the current situation and began charting progress made toward closing out suggestions in a more timely manner.

Production's ES coordinator Brian Dodds and Space Systems' ES coordinator Susanna Bruno met once a week with a Kearny Mesa Employee Suggestion Review committee consisting of Troy Shook, Dick Klaar, Jeff Roberts, and C.J. Andrews. They also met once a week with Jeff Pate, Tom Sallwasser, Pierre Chammas, Billy Simmons, and Kitt Douglas who are members of the Plant 19 team.

In addition to these meetings, the committee members dedicated many hours of reviewing suggestions, assigning them to appropriate department personnel for evaluation, and following up to ensure action was taken.

The results to date are indicative of their effort. Through the teams' dedication to their goal of reducing the backlog and improving the processing time for open suggestions, they recognized a 32-day (36%) reduction in processing span time for the seven-month period of June through December 1989. That is quite an accomplishment, but even that was soon outshined by their January 1990 figure which indicates a 66-day (73%) decrease from the June 1989 baseline.

Their ultimate goal is to reduce the processing time of ES's to 10 M-days within the Production Division. The group feels this is achievable through continued team efforts.

Retirees

Thanks and good luck to these Space Systems employees who recently retired:

Philip J. Asprion, Jr., Quality Assurance Specialist, Failure Analysis, 36 years

Joseph H. Azeka, Engineer Senior, Test Planning & Data, 34 years

Richard K. Bentler, Material Analyst, Inventory Analysis, 33 years

Joseph R. Chlad, Material Operations Supervisor, Dock-to-Stock Shipping & Receiving, 31 years

Richard J. Elling, Engineering Specialist, Ground Propellant Systems, 29 years

Robert R. Henry, Engineering Chief, Space RF & Instrumentation, 32 years

Robert L. Holcomb, Director-Product Line, Advanced Systems Development, 29 years

John W. Maloney, Project Engineer Senior, Advanced Systems Development, 30 years

Richard F. Maxa, Engineering Specialist, Space Systems, 30 years

Robert A. Smalley, Engineering Specialist, Titan/Centaur Test Planning, 31 years

Raymond S. Stevens, Group Engineer, Space Systems Structure and Mechanics, 39 years

Herbert R. Van Hoose, Quality Assurance Specialist, Procurement Quality Verification, 29 years

Salvatore D. Zullo, Engineering Specialist, Advanced Structures, 33 years

Engineers and the Law Meeting Scheduled

The General Dynamics Technical Women's Network and the Society of Women Engineers invite you to their March meeting: *Engineers and the Law*.

Two local attorneys will be discussing such diverse subjects as:

- Personal liability on project failures
- Patents on your innovations
- Opening your own business
- Investing your profits
- Keeping what you've made during a divorce.

There will be a question-and-answer period after the presentations. The meeting will be held on Tuesday, March 27, 1990 from 4 p.m. to 7 p.m. at the CRA Pavilion. Refreshments will be available. All are welcome.

Badge Recoding

Please be advised that if you have not had your employee badge recoded recently, you must do so immediately. The switch to the new access system will occur shortly.

Report to the Convair I.D. Office in KM Bldg 1, 1st Floor, northwest corner.

**7:30 a.m. to 8:30 a.m.
11:00 a.m. to 3:00 p.m.**

For further information call extension 38404

Space Briefs . . .

WalkAmerica is being firmed up at 3 locations in anticipation for the event. **Pat Gayton** is coordinating the affair in San Diego with the editor of the *Orbiter* representing Space Systems. **Terrie Hamen** and **Marsha Dale** are heading up Vandenberg's WalkAmerica efforts, while **Rita Jackson** is leading that important project at Cape Canaveral . . . March 15 is going to be **U.S. Service Academies Night** in the cafeteria at Kearny Mesa. Congressional liaison personnel and representatives from the service academies (West Point, Air Force Academy, Naval Academy, Coast Guard Academy and Merchant Marine Academy) will be present to answer your questions on educational and career opportunities. The program starts at 7:00 p.m. and is sponsored by Convair, Electronics, and Space Systems divisions . . . General Dynamics is participating in the **Sixth Annual San Diego County Elementary Science Olympiad** being held at Point Loma Nazarene College on Tuesday, March 20. The company is sponsoring the **Starry, Starry Night** segment in which the kids will be quizzed on astronomy . . . Save your telephone books! In honor of **Earth Day 1990**, General Dynamics in cooperation with **I Love A Clean San Diego County** will participate in a phone book recycling program. More details to follow!

Vandenberg Names Their 1989 Employee of the Year

The choice has been made and Vandenberg's Base Director's Employee of the Year for 1989 is **Mark Wright**.

Mark has been a General Dynamics employee for six years and is widely respected for his abilities. For example, he was on loan to San Diego Quality for approximately four months of the past year. His contribution in reducing the backlog in the San Diego Receiving and Inspection Department was outstanding and recognized by the presentation of a special achievement award.

Mark's customer service attitude and record of achievement set an example for everybody in QA and makes him an outstanding choice for the Base Director's Employee of the year.

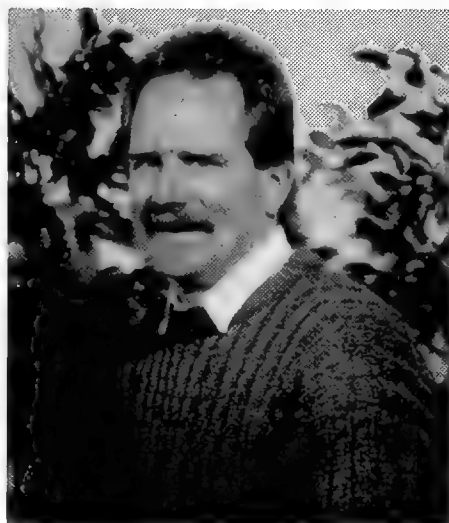
Others honored as their department's employees of the year were:

Val Brose, Engineering Specialist, Structure & Mechanical

John Fuhring, Design Engineer Senior, Engineering Services

Bill Hayden, Industrial Electrician, Launch Operations

Dixie Hewitt, Group Leader, Electrical Harness Shop



Mark Wright

Ric Indorf, MIS Specialist, Administrative Services

George LaCombe, Safety Engineer Senior, Human Resources

Kary Policht, Operations Representative, Fabrication and Maintenance

Burnie Slot, Technician Senior OSB, Launch Operations

CCAFS Blood Drive Successful Through Problem Solving

The first blood drive for Space Systems' personnel at Cape Canaveral was scheduled and ready to go. But at 3:30 on the afternoon before the event was to take place, the blood bank coordinator called with a problem. The mobile unit detailed to arrive at 7:30 the next morning had no generator to run the power needed for lights and air conditioning. The big question was: Could power be supplied or would the drive have to be cancelled?

Cancelled at Space Systems? Hey, no way!

Electrician Ken McGhee was ready and waiting the next morning to prepare cables and to hook up the mobile van to the Hangar K power supply. Jackie Malone, team leader for the Central Brevard Blood Bank mobile unit, said that not many of the sites they visit could have provided this type of service.

46 pints of blood were added to the Space Systems Division's reserve account as a result of this effort. And that includes good communications and cooperation between Rhonda House of facilities and site support supervisors Troy Cooper and Chuck Hayes.

Barbara Oliver to Receive T.W.I.N. Award

Barbara Oliver, chief of IRM/Voice and Data Services, has been named as the Space Division honoree in the Tribute to Women and Industry (TWIN).

TWIN is a nationwide program of the YWCA. Its purpose is to honor successful career women who have made a significant contribution to their companies and the employers who recognize their accomplishments in the workplace.

Barbara was chosen for the award for her many contributions to Space Systems telecommunications. This included realtime visual exchange of information via photophone; full motion teleconferencing center that resulted in reduction in travel expenses; installation and training for new Cape Canaveral phone services; projected savings of \$500 thousand per year in Space Systems telephone

autonomy that averaged approximately 40,000 messages per month; West Coast representative for the General Dynamics Interconferencing Network; and division representation to evaluate regional telecommunications decisions in GDNA.

Outside the company, Barbara worked hard as a volunteer in the community. This included the Angel Tree Project which donated Christmas gifts to abused children. She participated in *Space Talks*, a division-sponsored presentation on space to schools in the San Diego Area. Barbara is also an inter-racial adoptive parent (Sioux-black) and is currently working on her masters in fine arts.

Heartiest congratulations to Barbara on receipt of this well-deserved honor.

The Orbiteer

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Huntsville, (205) 880-0660

Lela Reddekopp, Reporter
VAFB, (805) 866-9556

Space Systems employment for the week ending February 24, 1990 was 4,875.

March 23, 1990

To all employees:

Now that you have had the opportunity to review the corporatewide results of the 1989 Survey of Employees published in the *GD World*, this edition of the *Orbiter* will reflect our own division's survey results.

Good communications is important in any successful enterprise. It is the essential linchpin that holds any good team together.

The 1989 survey produced interesting and timely data, but surveys don't change anything — people do. It will be up to you and I, working as a team, to put the lessons learned from this great effort into operation. Our ultimate goal is to make Space Systems Division a better and more profitable place to work. We need your input in order to make this happen; we'll start with the high priority items and formulate a plan dedicated to effective and positive accomplishments, then put it into effect with vigor and determination.

I ask you to offer your comments and suggestions during feedback sessions and subsequent meetings. With your help, we will make Space Systems a good place to work for many years to come.

A. M. Leland



February's *GD World* contained a special report detailing the corporatewide results of the 1989 Survey of Employees. This edition of the *Orbiter* contains the Space Systems Division results on all 100 survey questions, as well as comparisons to the corporatewide total results. The questionnaire itself contained 75 core questions that were asked throughout the corporation, plus an additional 25 questions that were unique to our division. This survey questionnaire was developed with input from employees throughout the corporation.

In our division, seven focus groups comprised of randomly selected employees were held in May 1989. Focus group meetings were also held within each function to solicit input. The purpose of these focus groups was to identify major issues concerning our division.

The survey was administered at many GDSS locations during the month of October. The consulting firm, Sirota and Alper Associates analyzed the data during November and December. Feedback of survey results began early in 1990. On January 16, the corporatewide results were discussed with the divisions' general managers and corporate staff in St. Louis. The Space Systems data were reviewed with division staff members in San Diego on January 31. You will soon be hearing your own functional data results and will also have the opportunity to be involved in the action planning process.

Although participation in the survey was voluntary, 3,237 Space Systems employees took the survey (67% participation rate). We have doubled in size since the first survey in 1986, yet our response rates remained the same.

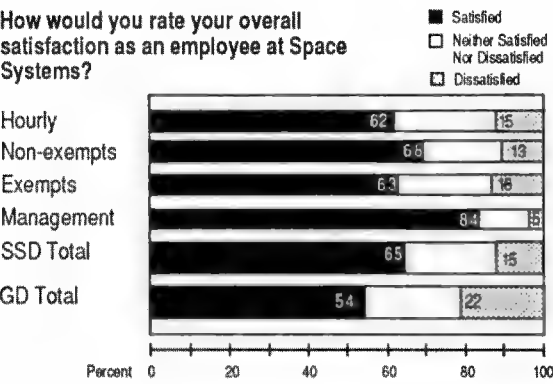
| Space Systems Employees Responding to the Survey | |
|--|--------|
| Employee Classification | Number |
| Hourly Employees | 710 |
| Non-Exempt Employees | 208 |
| Exempt Employees | 1,918 |
| Management Employees | 367 |
| Unidentified Employees | 34 |
| TOTAL | 3,237 |

As you will see, the survey results have been grouped by category, with an explanation and analysis for each category. Results for all 100 questions, with a breakdown by employee grouping, are presented. Total corporatewide responses have also been included for comparison purposes.

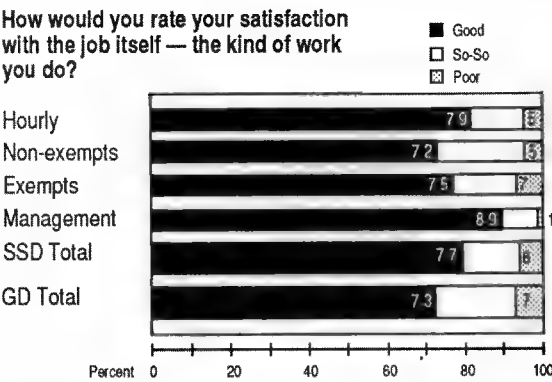
1. overall satisfaction

Explanation: The questions in this section asked us to rate our overall satisfaction both in working for Space Systems and in our individual jobs, and how much we enjoy coming to work. Since pride is an important part of job satisfaction, it was also included here. Responses to these questions provide a general measure of our satisfaction and morale.

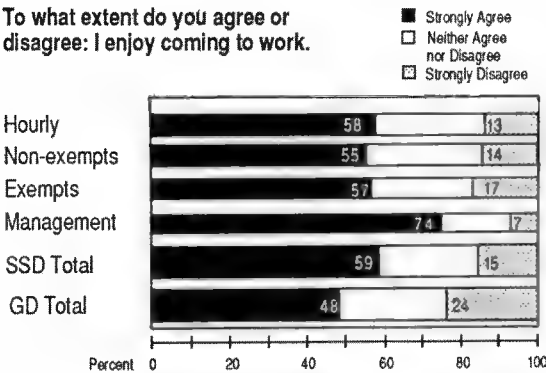
How would you rate your overall satisfaction as an employee at Space Systems?



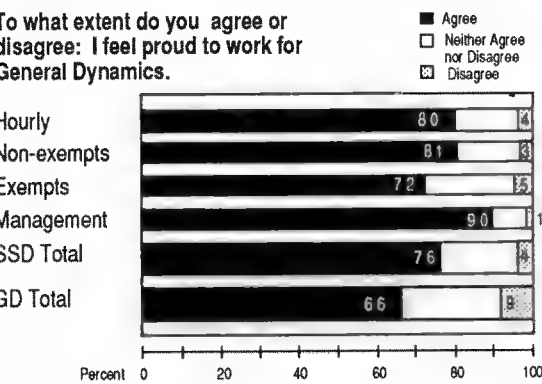
How would you rate your satisfaction with the job itself — the kind of work you do?



To what extent do you agree or disagree: I enjoy coming to work.



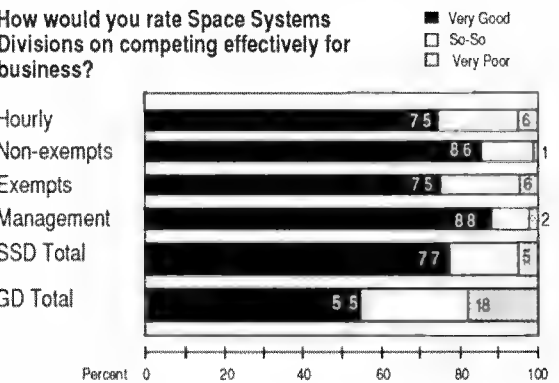
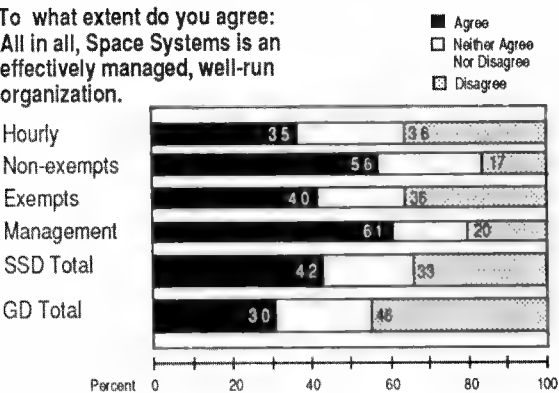
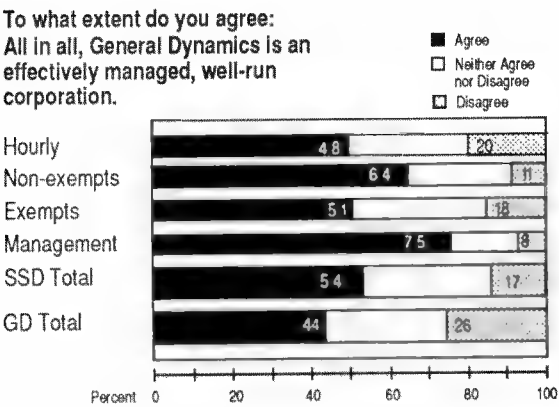
To what extent do you agree or disagree: I feel proud to work for General Dynamics.



Analysis: The survey results show that all employee groups have very high levels of job satisfaction (77% favorable) and overall satisfaction (65% favorable). Furthermore, more than three out of four Space Systems employees are proud to work for General Dynamics, and three out of five agree that we enjoy coming to work.

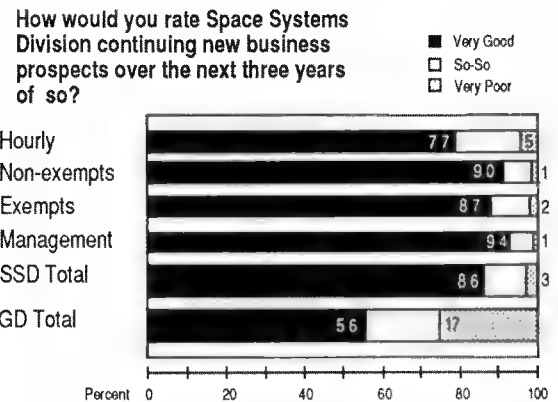
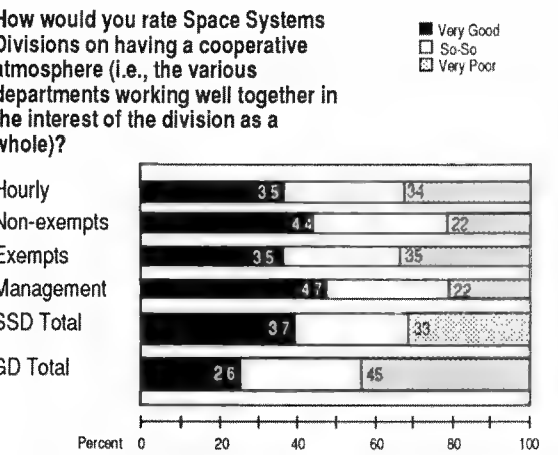
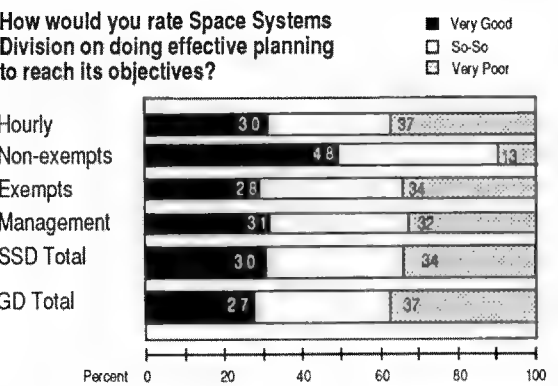
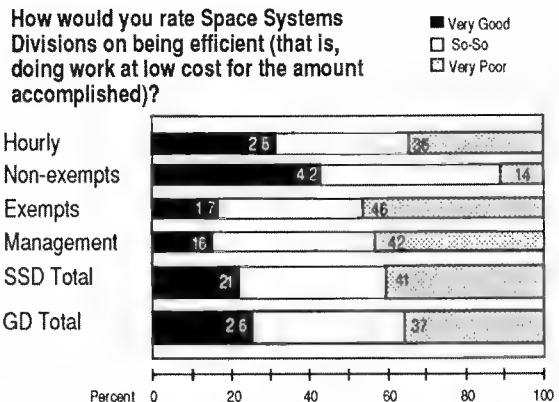
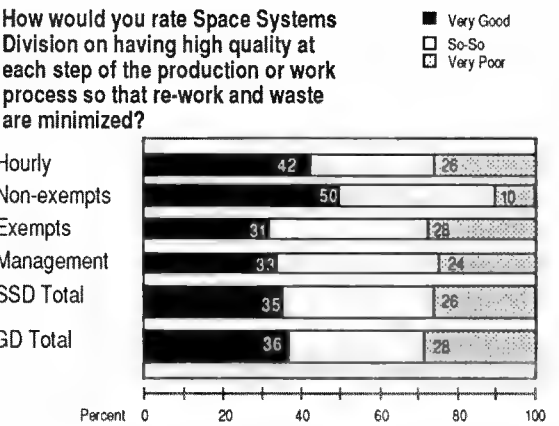
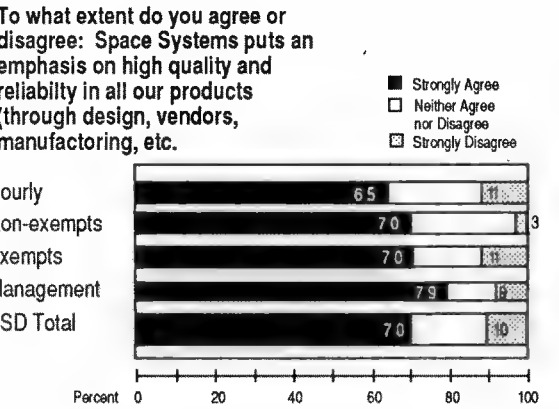
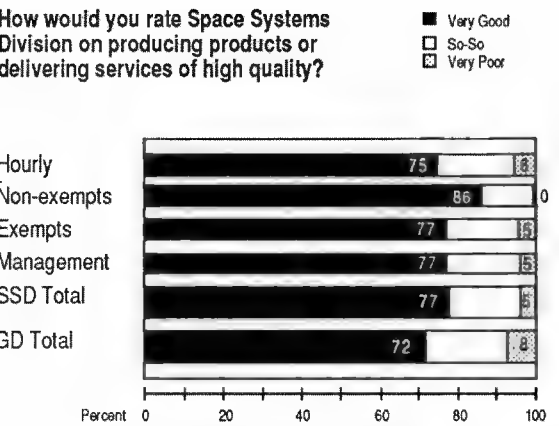
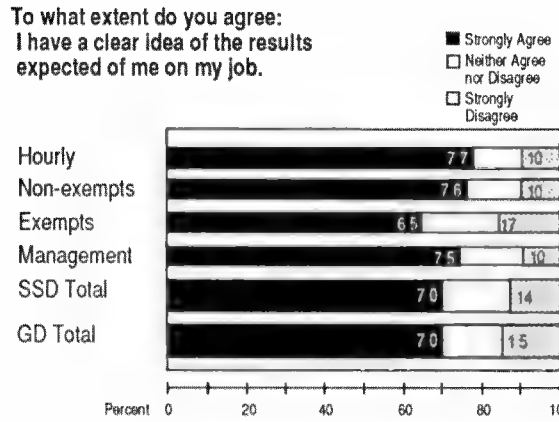
2. performance of organization

Explanation: These questions asked us how we view the performance of General Dynamics and of Space Systems, and if we feel that the corporation and division are effectively managed and well run organizations. We also rated Space Systems' efficiency, planning, cooperation, and product quality, along with the division's ability to compete and its near-term business prospects.

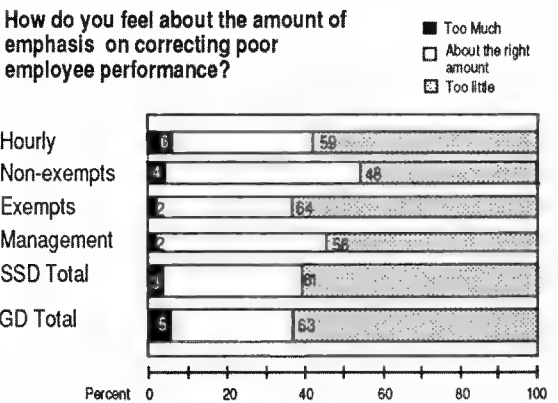
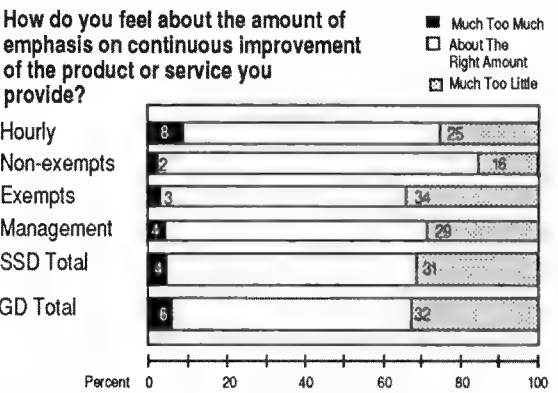
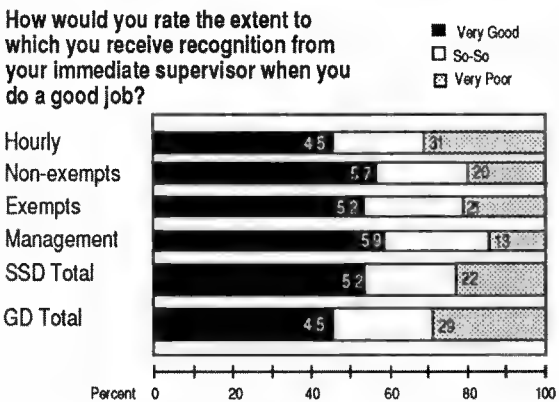
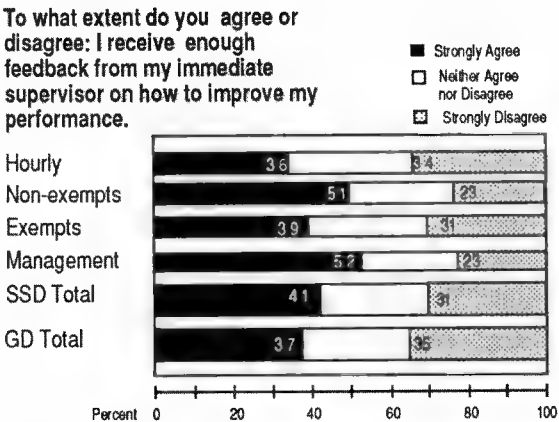


3. performance management and supervision

Explanation: This section addressed specific issues in our individual work groups including relationships with supervisors, and how we feel we are doing our jobs. Recognition, performance expectations, performance improvement, and supervisor competency were also covered here.

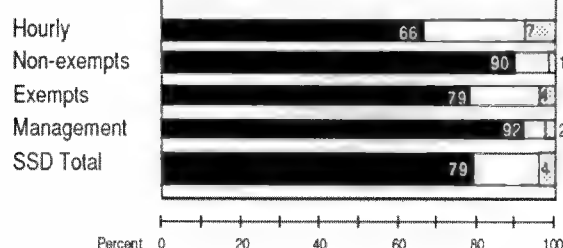


Analysis: Approximately one-half of the respondents (54%) agree that General Dynamics is effectively managed and well run. Slightly less than half (42%) also feel that way regarding Space Systems. Exempt and hourly employees had significantly less favorable responses to these questions than other employees. More than three-fourths (77%) of all Space Systems employees feel the division competes effectively for business and produces high-quality products and services. Seventy percent agree that the emphasis on high quality and reliability in all our products is appropriate. A large majority (86%) feel the next three years' business prospects look good. However, responses were significantly lower regarding interim processes. Only 35% responded favorably regarding high in-process quality, 21% responded favorably regarding efficiency, and 30% responded favorably regarding Space Systems' planning effectiveness for reaching objectives.



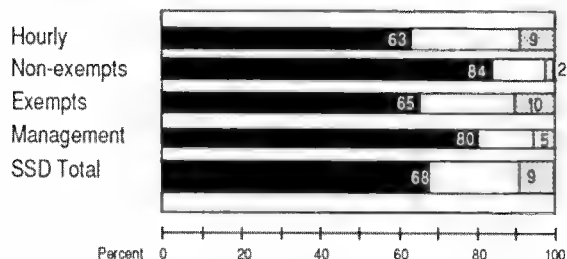
All in all, how good a job is being done by the Division General Manager?

Very Good
So-So
Very Poor



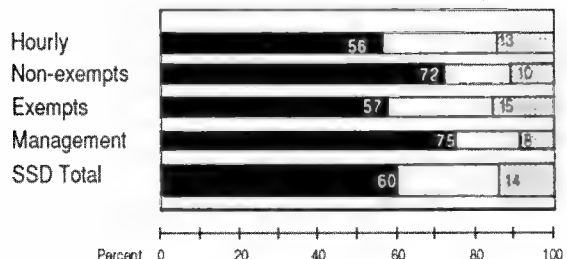
All in all, how good a job is being done by your Vice President?

Very Good
So-So
Very Poor



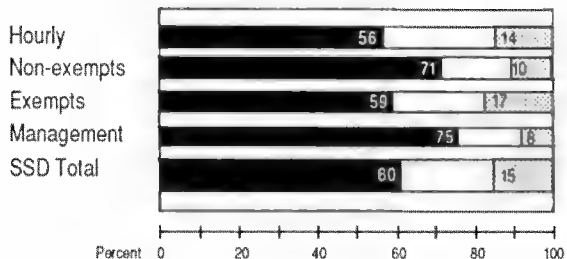
All in all, how good a job is being done by your director or equivalent?

Very Good
So-So
Very Poor



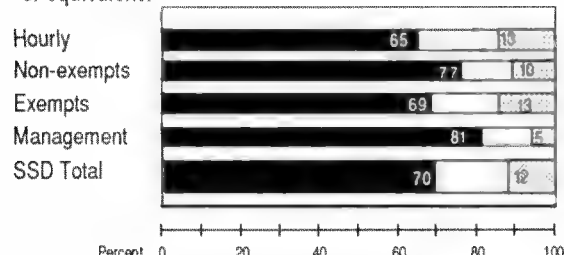
All in all, how good a job is being done by your manager or equivalent?

Very Good
So-So
Very Poor



All in all, how good a job is being done by your immediate first-line supervisor or equivalent?

Very Good
So-So
Very Poor



Employees were asked what changes would be made if they were in charge of the department. Overall responses were reflected by one employee's comment, "Increase communication, make all employees feel like they are the major part of the team. Make people feel good about work and that they are important." What changes would you make in your department? Eighty-four percent of the suggestions centered around communication and leadership.

42%

say better communication

- Encourage cooperation among groups and departments
- Clearer sense of responsibilities, directions, and goals
- More emphasis on employee input and listening to employees
- Need weekly meetings
- More access to information for employees
- Cross training with other departments and better training

42%

say stronger leadership

- Better supervision—not aware—not accessible, etc.
- More responsive to employee needs, more respect for employees
- More equal distribution of workload
- Give lower level employees more authority, encourage new ideas
- Hire more qualified people
- Cut paperwork
- Too many people in departments, departments are too large

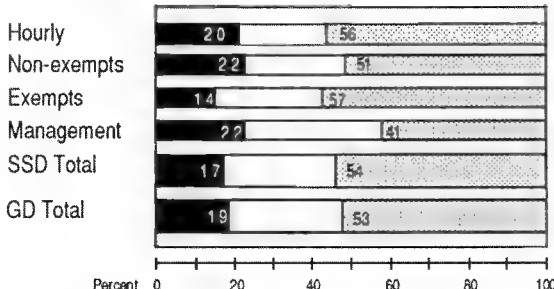
Important things to change for improving performance?

Comments Salaried Hourly

| | | |
|--|-----|-----|
| Better tools, equipment/access to materials, better maintenance of tools | 24% | 27% |
| Better supervision/more qualified, competent supervision | 11 | 12 |
| Better communication/more advance communication, better access to information | 10 | 8 |
| Better training/more training | 6 | 7 |
| Better management-employee relations; treat employees with dignity, respect, show concern for employees | 4 | 6 |
| Better organization of work, better procedures, better planning, better scheduling by upper management, less paperwork | 9 | 6 |
| Better pay, incentives, reward good workers | 7 | 5 |
| Better working conditions, climate control, and better lighting | 11 | 5 |
| Better cooperation between shifts, across departments; people working together | 8 | 3 |
| Less bureaucracy, more timely decisions; less cumbersome approval cycles, more freedom to do my job, and more authority a lower levels | 11 | - |
| More performance feedback, and quicker corrective action; should not tolerate poor performers | - | 7 |
| Better skilled employees, more personnel, more support staff | 3 | 3 |
| Management plays favorites with work and promotions | - | 2 |
| Miscellaneous | 5 | 9 |

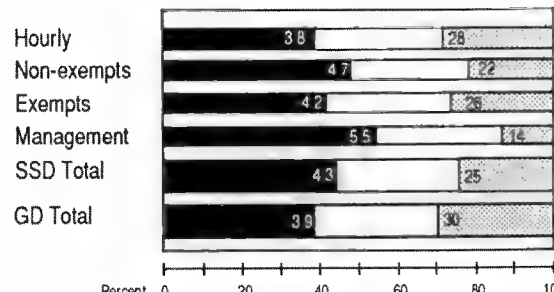
If conditions were changed where you work how much would you say you could personally improve your performance?

I could improve my performance a great deal
Somewhat
Not at All—My performance is as high as it can be



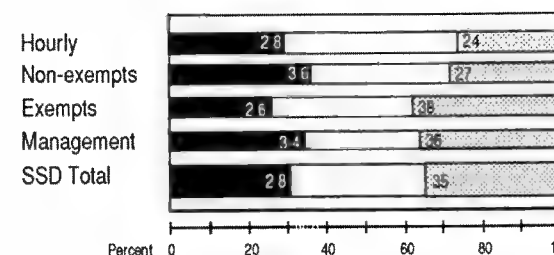
How would you rate the effectiveness of your last performance review/appraisal?

Good
So-So
Poor



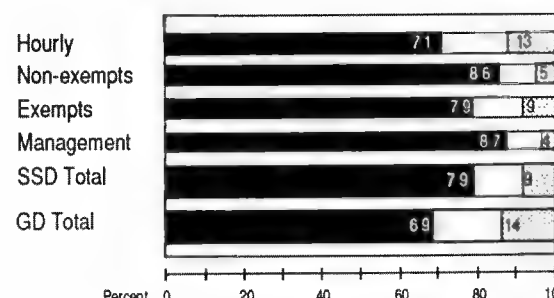
How would you rate the effectiveness of the annual performance rating system (1P, 2P, 3S)?

Very Good
So-So
Very Poor



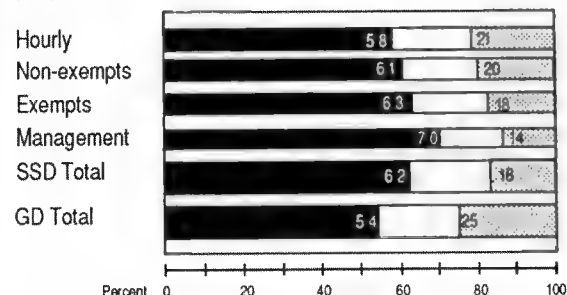
How would you rate your immediate supervisor on being technically competent (knowing the job)?

Very Good
So-So
Very Poor



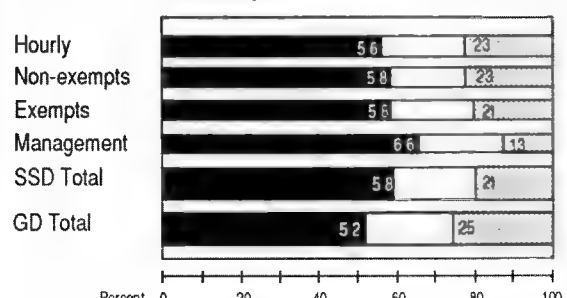
How would you rate immediate supervisor on being competent in human relations (dealing with the people who work for him/her)?

Very Good
So-So
Very Poor



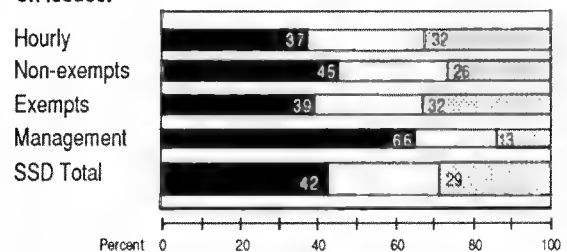
How would you rate your immediate supervisor on communicating with you about matters that affect you?

Very Good
So-So
Very Poor



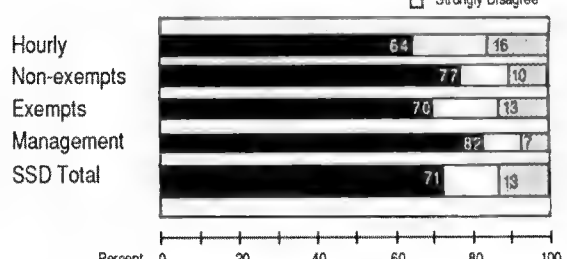
To what extent do you agree or disagree: Management where I work, listens to employees and takes action on issues.

Strongly Agree
Neither Agree nor Disagree
Strongly Disagree



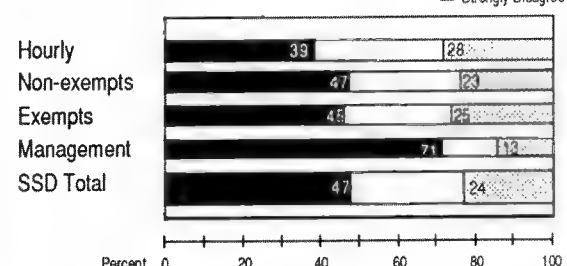
To what extent do you agree: I feel I am trusted by management.

Strongly Agree
Neither Agree nor Disagree
Strongly Disagree



To what extent do you agree: I trust management where I work.

Strongly Agree
Neither Agree nor Disagree
Strongly Disagree

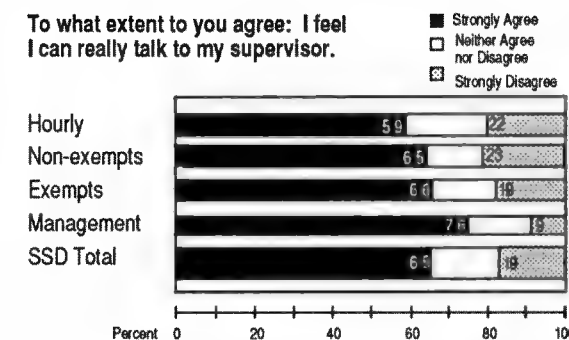
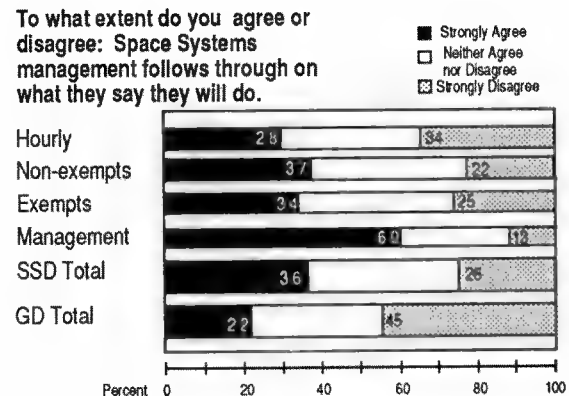
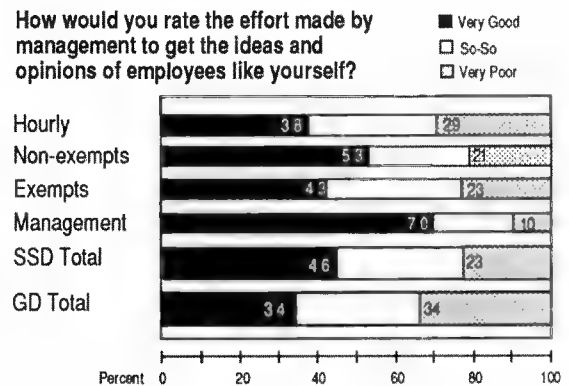
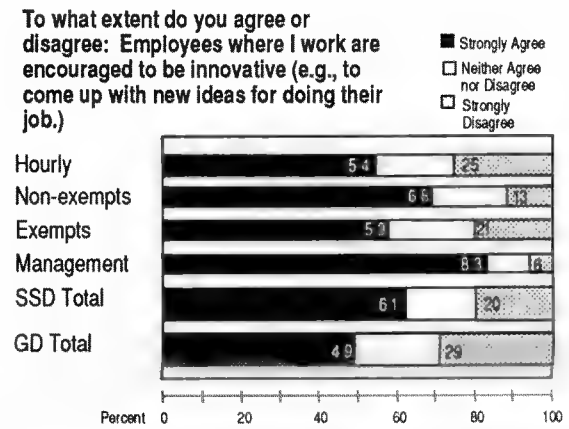
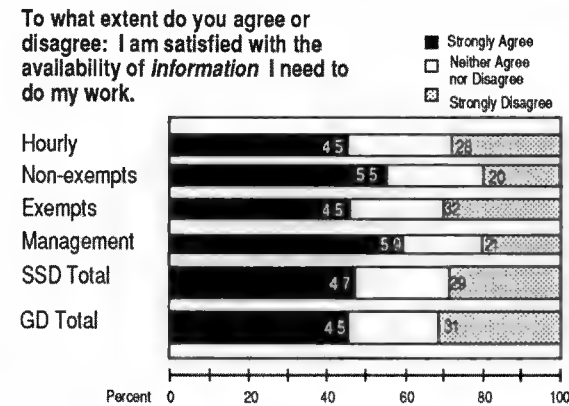
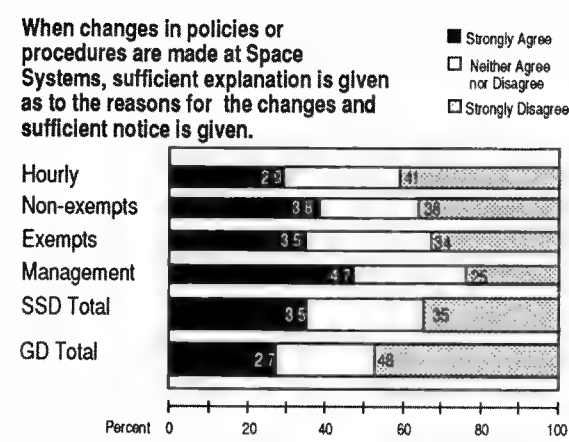
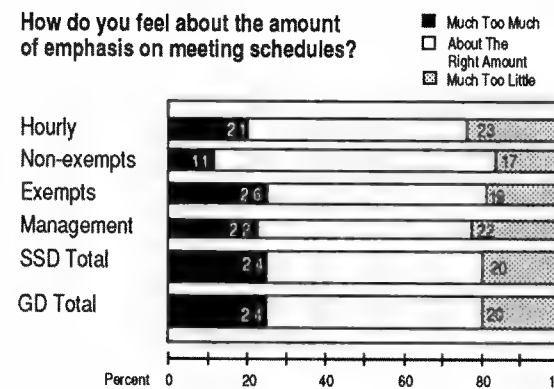
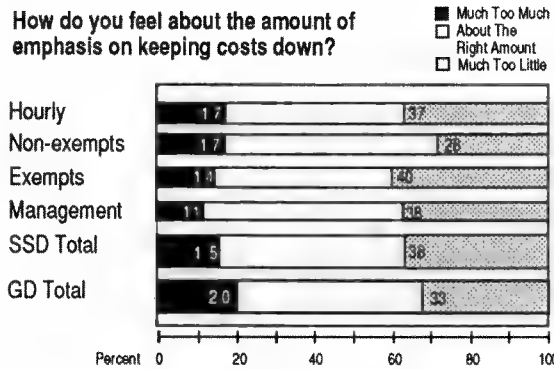
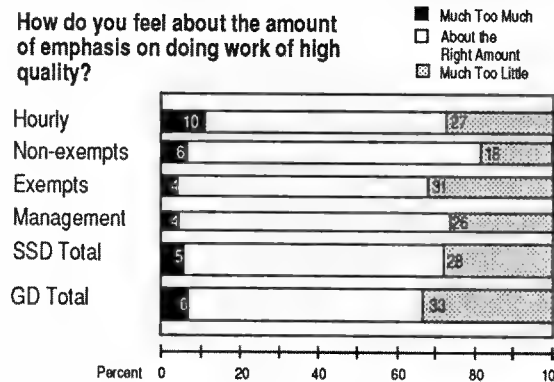
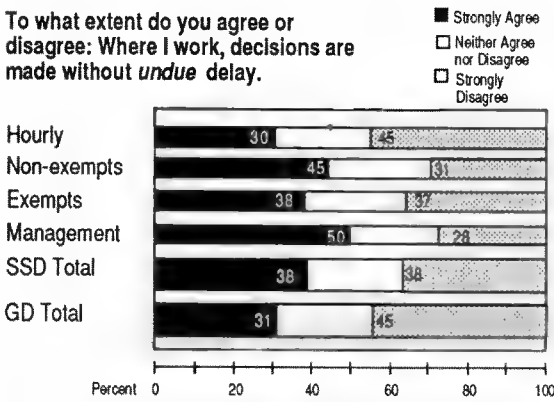
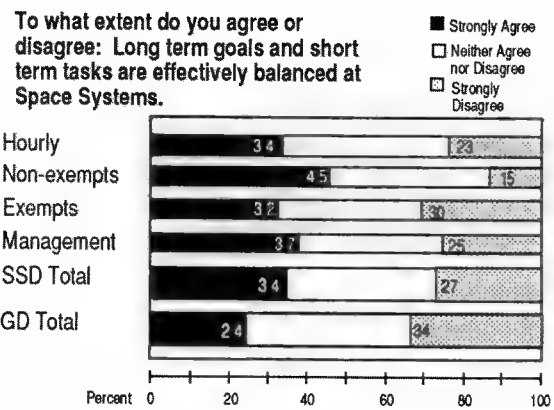
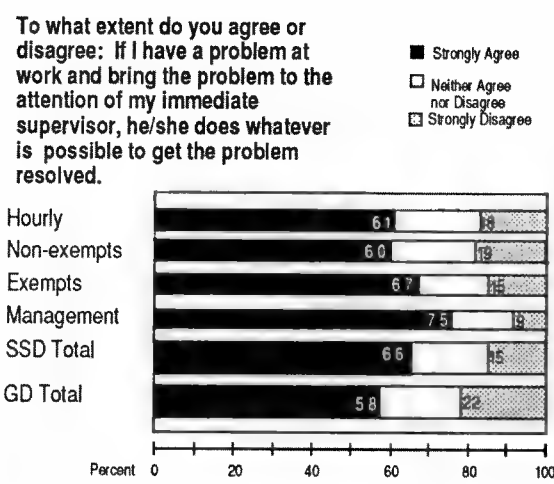
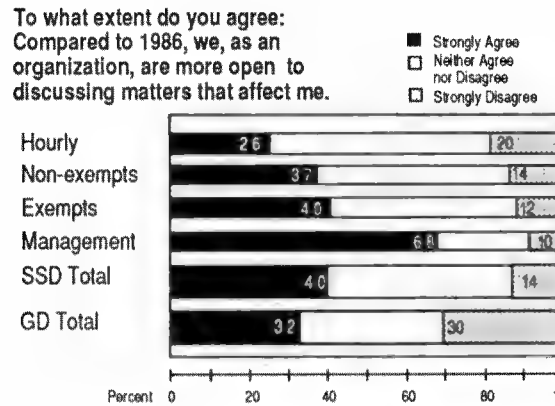
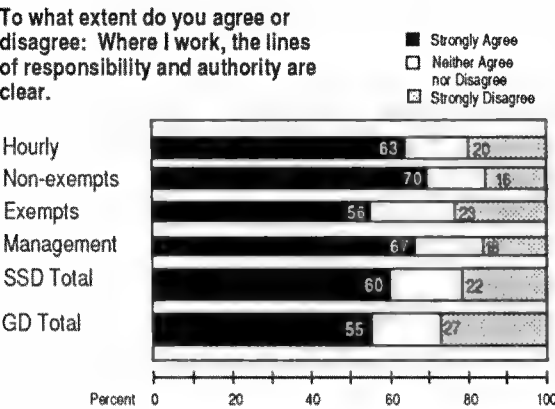
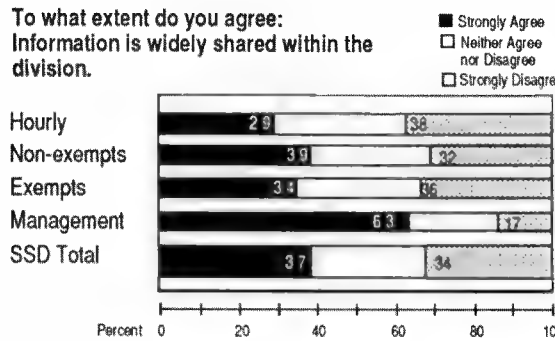
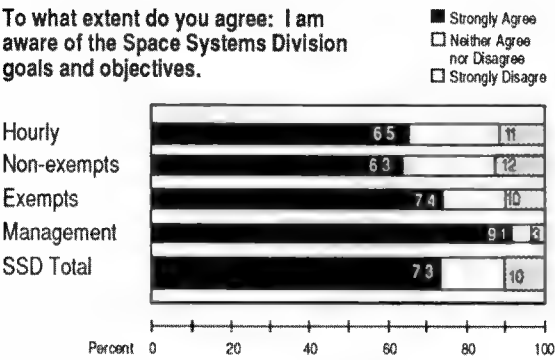
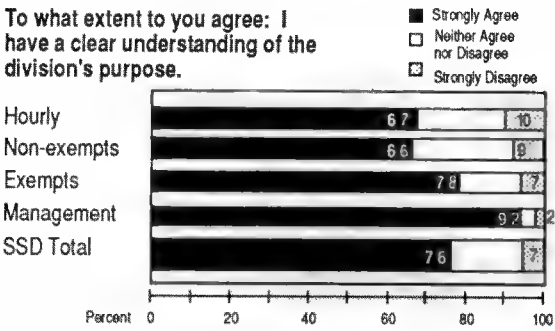


Analysis: Managerial competence at all levels was rated fairly positively. While supervision's technical competence was rated highly (79% favorable), their competence in human relations was rated lower at 62%. For the most part, employees feel they have a clear idea of the results expected on their jobs. However, the results indicate a need for more feedback and recognition. Most employees (61%) feel too little is being done to correct poor employee performance. Employees had mixed responses regarding the performance appraisal system and the effectiveness of their last performance review.

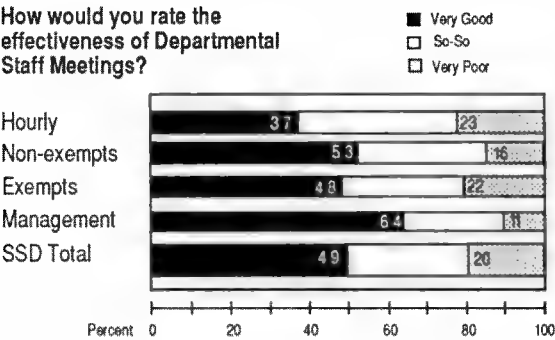
Most employees (71%) feel trusted by management, yet employees' trust in management is significantly lower (47% favorable). Sixty-five percent feel we have the right emphasis on continuous improvement. However, 54% of Space Systems' employees feel that their performance would improve if conditions were changed.

4. communication and decision-making

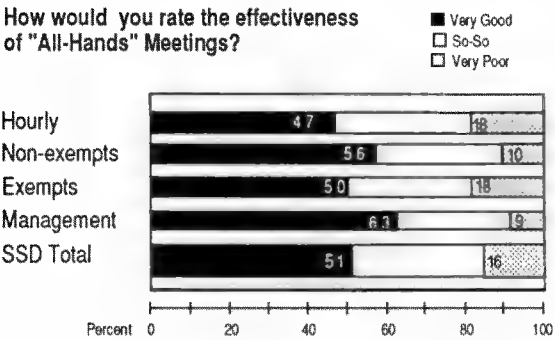
Explanation: Internal communications and decision making are two areas that significantly impact our feelings of job satisfaction, work group relationships, and performance ability. A series of questions asked us to evaluate Space Systems' communication from employees to management, from management to employees, and from group to group. Other questions covered priorities in our work, decision making, and the balance of long-term goals and short-term tasks.



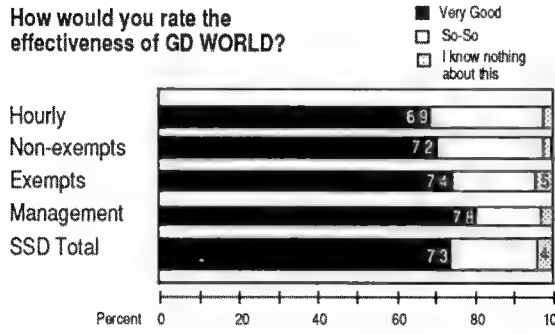
How would you rate the effectiveness of Departmental Staff Meetings?



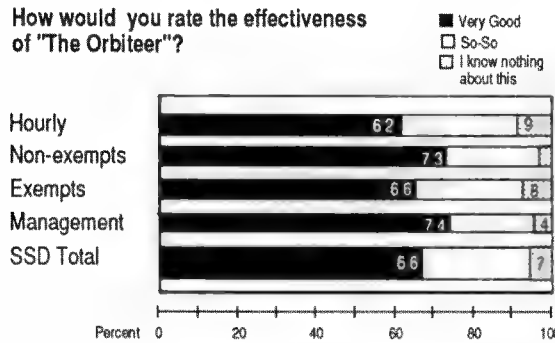
How would you rate the effectiveness of "All-Hands" Meetings?



How would you rate the effectiveness of GD WORLD?



How would you rate the effectiveness of "The Orbiteer"?



Analysis: Because communication is important in our jobs, we were asked to rate the effectiveness of both formal and informal communication in our division. Two out of three employees agree we can talk openly to our supervisors. A majority also understand the division's purpose and are aware of Space Systems goals and objectives. However, within Space Systems, only 37% agree that information is widely shared. Forty-seven percent are satisfied with the availability of information to get the job done, yet 60% feel they have the necessary authority to do an effective job.

Several questions were also asked regarding downward communication. Moderately favorable responses were given regarding clear lines of responsibility and authority, as well as encouragement to be innovative. While management's efforts to get ideas and opinions and management follow-through were rated low, managers are seen as being responsive to problems brought to their attention. The survey results indicate that more explanation needs to be given when changes are made.

The effectiveness of departmental staff and "all-hands" meetings received favorable ratings. However hourly employees viewed them less positively than salaried employees. The formal publications-GD World and the Orbiteer-were highly rated.

We were asked to write our suggestions for improving communication and teamwork within our division. Again, two major themes emerged: communication and leadership. For example, a typical response was, "There must be ways to get groups in contact with one another. Most groups are organized like isolated islands, with no connecting bridges. Perhaps meetings between groups that should be working together would give them a chance to become acquainted."

42%

say better communication

- Groups too spread out and isolated, more group meetings needed
- Better cooperation and communication needed between groups and departments
- More all-hands meetings and group meetings, more feedback on performance
- Better orientation and training on what departments do and how they're interdependent
- More flowdown information on meetings and plans
- Communications have improved, but still more needed

42%

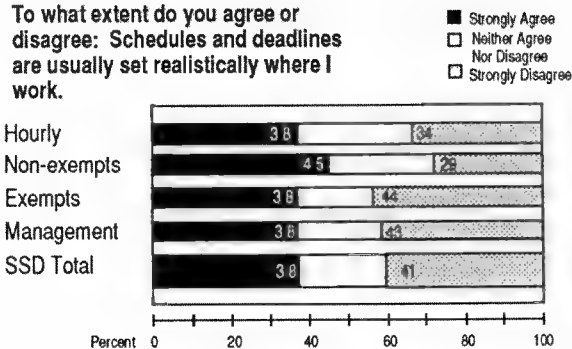
say stronger leadership

- Better leadership, supervision, management
- Teamwork incentives; encourage teamwork
- Management needs to be more responsive
- More cooperation among levels of management
- Everyone must meet same standards

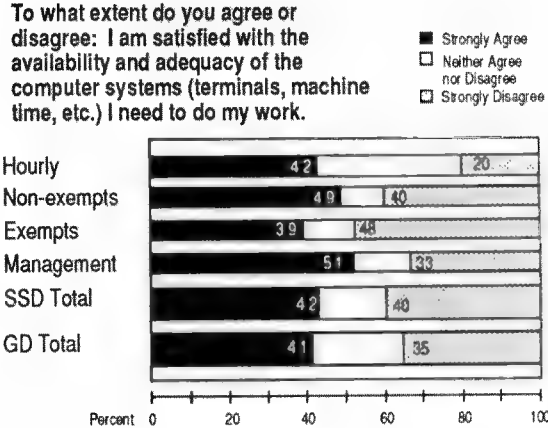
5. ability to get work done

Explanation: These questions asked us to rate factors that influence how much we accomplish as individual employees and as work groups. Covered topics include how work is organized, the amount of work expected, and adequacy of training. We also rated the availability and adequacy of equipment, tools, computer systems, parts, and materials needed for our jobs. We then evaluated our physical working conditions, including safety and other aspects.

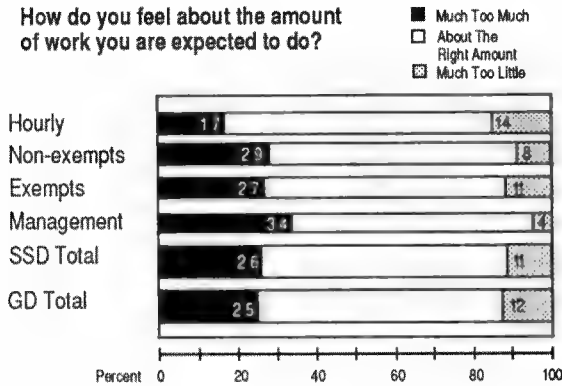
To what extent do you agree or disagree: Schedules and deadlines are usually set realistically where I work.



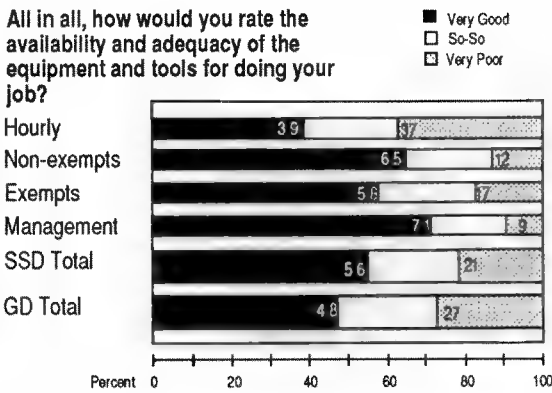
To what extent do you agree or disagree: I am satisfied with the availability and adequacy of the computer systems (terminals, machine time, etc.) I need to do my work.



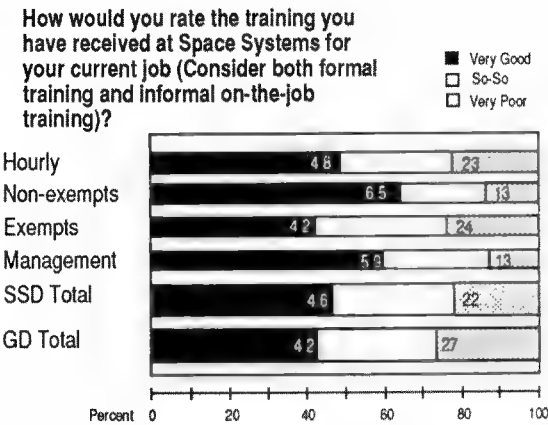
How do you feel about the amount of work you are expected to do?



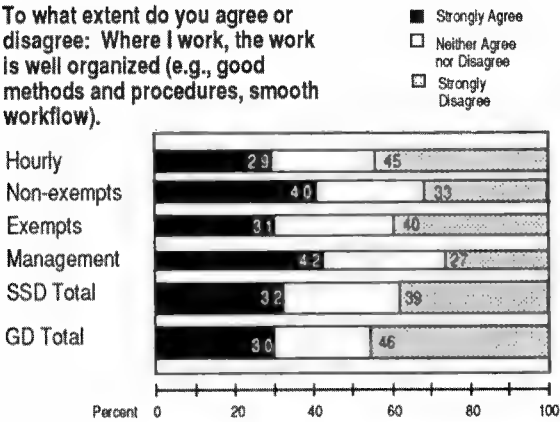
All in all, how would you rate the availability and adequacy of the equipment and tools for doing your job?



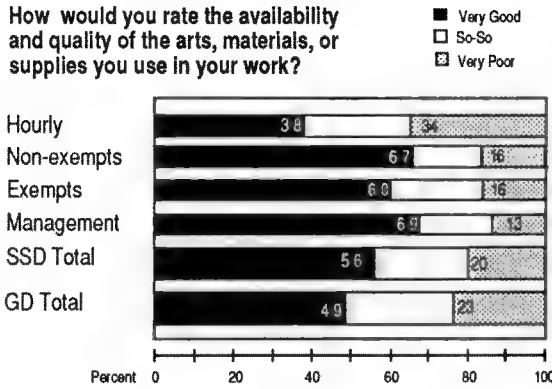
How would you rate the training you have received at Space Systems for your current job (Consider both formal training and informal on-the-job training)?



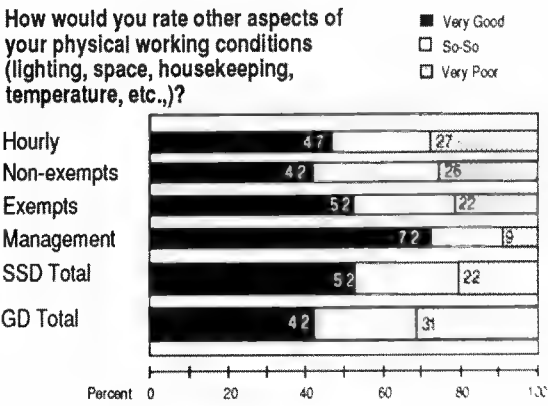
To what extent do you agree or disagree: Where I work, the work is well organized (e.g., good methods and procedures, smooth workflow).



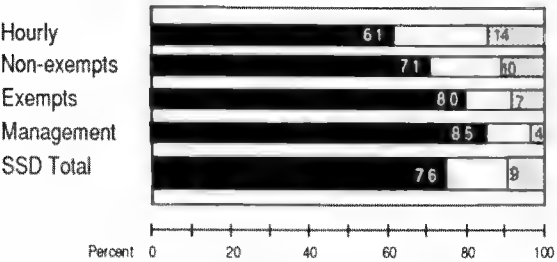
How would you rate the availability and quality of the arts, materials, or supplies you use in your work?



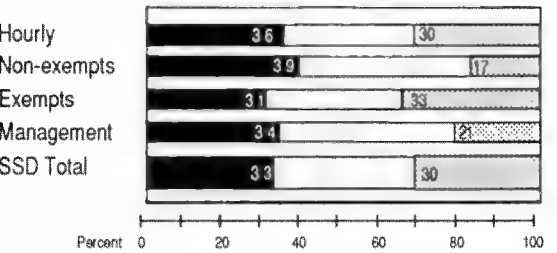
How would you rate other aspects of your physical working conditions (lighting, space, housekeeping, temperature, etc.)?



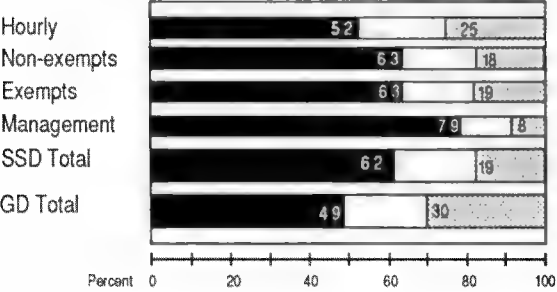
How would you rate cooperation among employees in your own work unit (that is, the unit consisting of your immediate supervisor and the employees who report to him/her)?



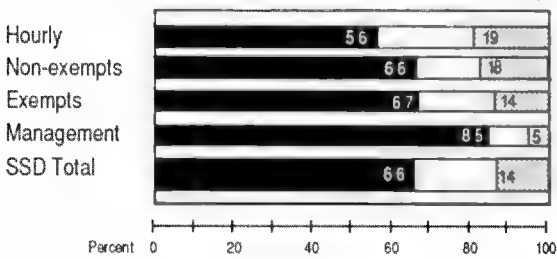
How would you rate cooperation between departments within Space Systems?



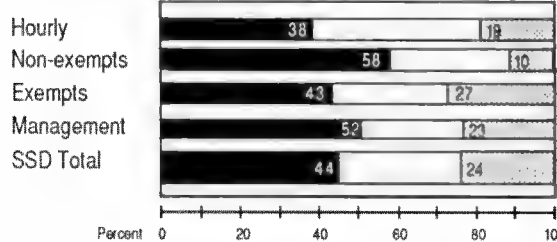
To what extent do you agree or disagree: Where I work, cooperation and teamwork are actively encouraged and recognized.



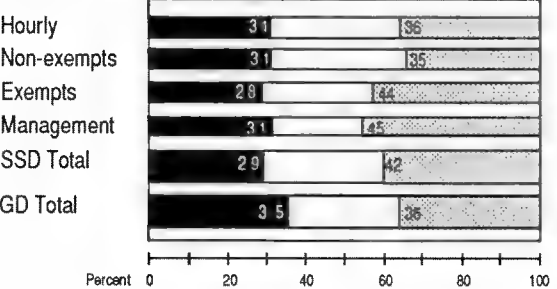
To what extent do you agree: In my department, cooperation and teamwork are actively encouraged.



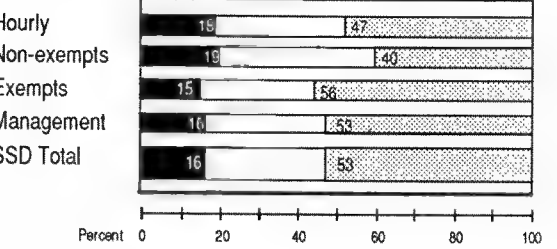
All in all, how would you rate the effectiveness with which the matrix structure currently operates in Space Systems Division (Good coordination, good planning, good use of resources, etc.)



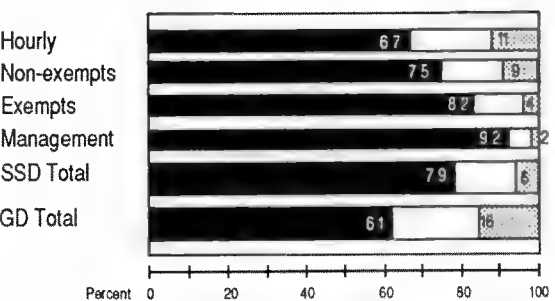
To what extent do you agree or disagree: The amount of unnecessary paperwork I have to do seriously interferes with getting my job done.



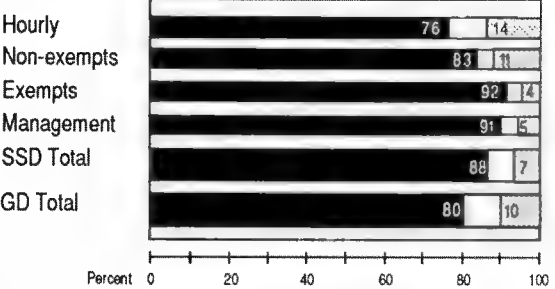
To what extent do you agree or disagree: I could be more effective in my job if it weren't for the unnecessary systems, procedures, paperwork, etc.



How would you rate Space Systems on providing a safe and healthy workplace for employees?



To what extent does the use/abuse of drugs and alcohol impact the productivity and quality performance of your work group?



Improving the effectiveness of Space Systems in making it a better place to work.

| Comments | Salaried |
|--|----------|
| More management participation/better management/all level meetings | 14% |
| Pay for overtime/pay incentives/more pay | 14 |
| Better vacation policy | 10 |
| Cut paperwork | 8 |
| Better communication among departments | 8 |
| More flexible work schedule/flex time | 6 |
| TQM is needed | 6 |
| Better working conditions and environment | 6 |
| Streamline the procurement process | 5 |
| More access to computers | 5 |
| More training (clearer definition of responsibilities) | 4 |
| Miscellaneous | 15 |

NOTE: There were not enough hourly responses to provide categories of comment. However, of the write-in responses received, the major themes were:

- Better management/more competent, better people skills
- Better teamwork and cooperation/reduce internal politics
- Change smoking policy back/policy is too strict

Analysis: At least 62% of employees in all groups say the workload is about right. However, mixed responses were given regarding work organization (methods, procedures, smooth workflow). Mixed responses were also given regarding schedules and deadlines. The results indicate unnecessary paperwork is seriously interfering with the work. In fact, 53% of the responses indicate we could be more effective in our jobs if it weren't for the unnecessary systems and procedures.

Cooperation and teamwork within the division were given above average ratings, and a majority of employees favorably rated cooperation within the work unit. However, cooperation among departments was rated much lower (33% favorable).

A majority of the employees (70%) feel we have a safe and healthy workplace, yet only one-half responded favorably regarding other conditions (lighting, space, and housekeeping).

Approximately one-half of the employees are satisfied with the availability of equipment tools, parts, materials, and supplies. While our division has one of the highest computer/employee ratios in the corporation, only 40% are satisfied with the availability and adequacy of computer systems.

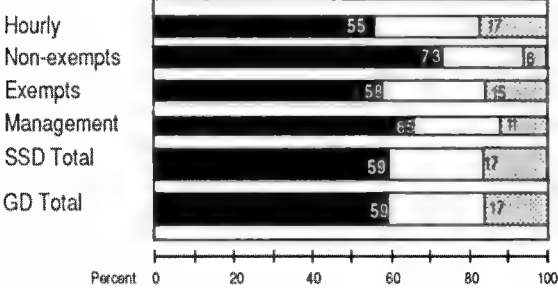
6. treatment of employees

Explanation: "People" issues were covered in this section. We expressed our feelings on economic topics and employee relations.

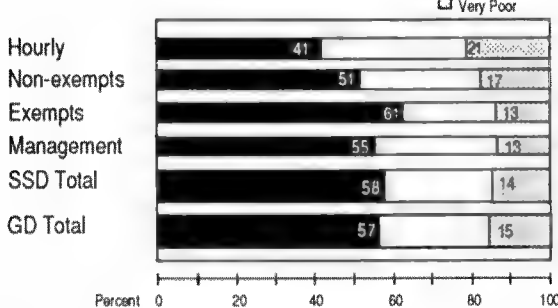
A. Economic Issues

Here we evaluated our pay and benefits, along with our understanding of pay and promotion policies. Two write-in questions asked us to comment on pay, promotion, and benefit topics.

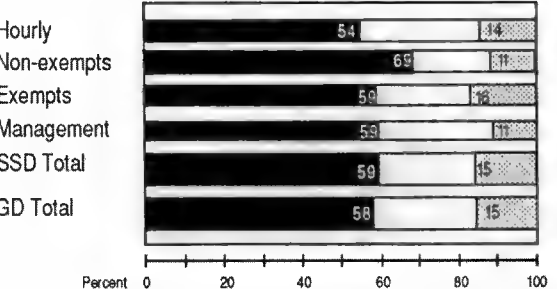
Overall, how would you rate the benefits you receive—such as pension, medical, vacations, etc?



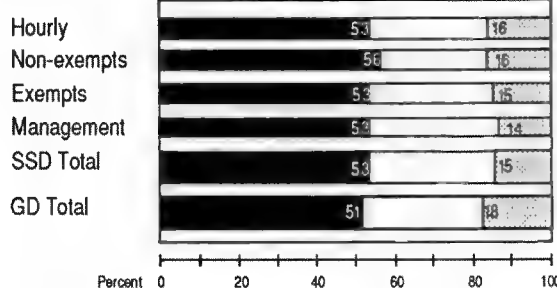
How would you rate Dynaflex on its clarity (do you understand it)?



How would you rate Dynaflex on its value to you and your family (do you have the choices most important to you)?



How would you rate Dynaflex on its ease of use (can you easily get information when needed or claim payment)?



Benefits (including reactions to Dynaflex, pensions, medical, vacation, etc.).

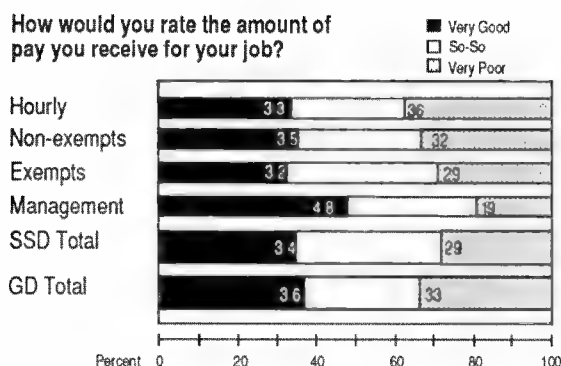
Comments Salaried

| | |
|--|-----|
| Costs going up too much, Dynaflex a cutback, GD just saving money, benefits declining each year/ GD misled us/ dislike paying more for medical | 44% |
| Not enough vacation, need more vacation/2 weeks after 5 years not enough, not competitive | 30 |
| Retirement plan needs improvement | 8 |
| Can get insurance cheaper on the outside/should be employees choice | 5 |
| Plan doesn't make allowances for married couples working for GD, why pay twice for benefit | 4 |
| Should provide eye care/vision plan | 3 |
| Miscellaneous | 8 |

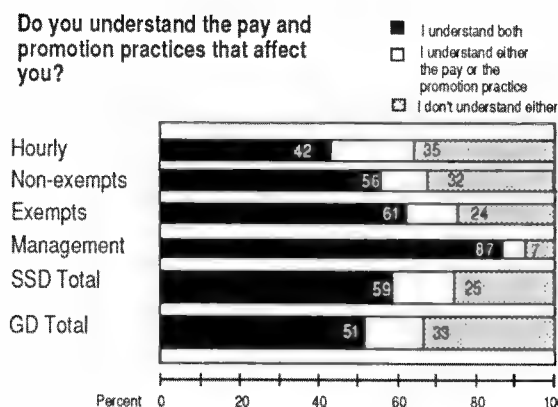
NOTE: There were not enough hourly responses to provide categories of comment. However, of the write-in responses received, the same major themes were expressed with the following additions:

- Need more sick days
- Good benefits, satisfied
- Should receive same benefits as salaried workers

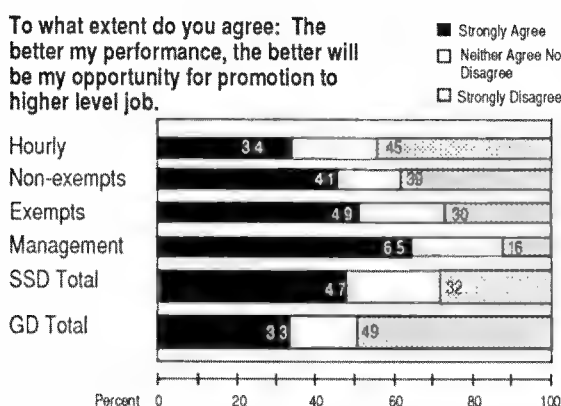
How would you rate the amount of pay you receive for your job?



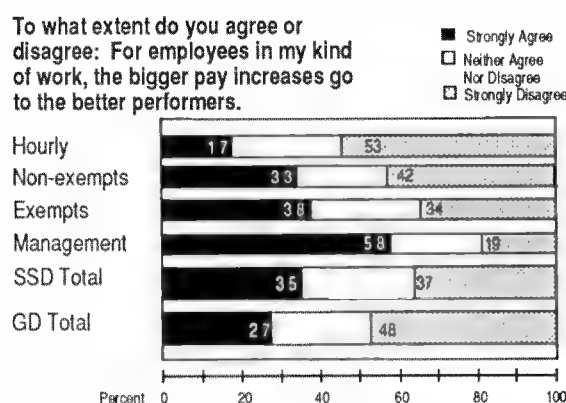
Do you understand the pay and promotion practices that affect you?



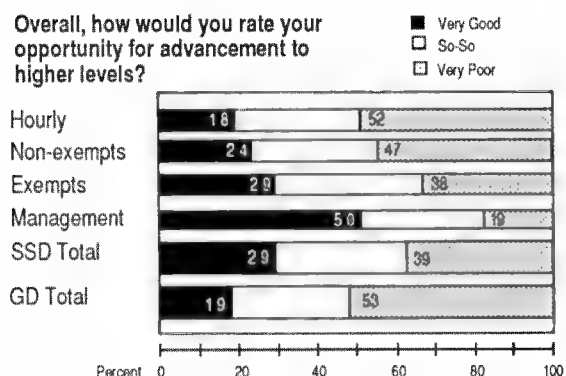
To what extent do you agree: The better my performance, the better will be my opportunity for promotion to higher level job.



To what extent do you agree or disagree: For employees in my kind of work, the bigger pay increases go to the better performers.



Overall, how would you rate your opportunity for advancement to higher levels?



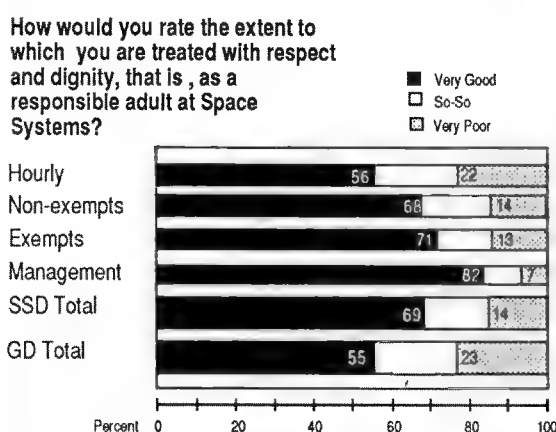
Analysis: Slightly over one-third indicated satisfaction with the rate of pay. One-fourth of the employees do not understand either the pay or promotion policies. Only 35% agree that bigger pay increases go to the better performers. Almost one-half (47%) responded that better performance leads to better promotional opportunities. Much lower ratings were given regarding opportunities for advancement (29% favorable).

Responses were moderately favorable about benefits, including the value and clarity of Dynaflex, as well as its ease of use.

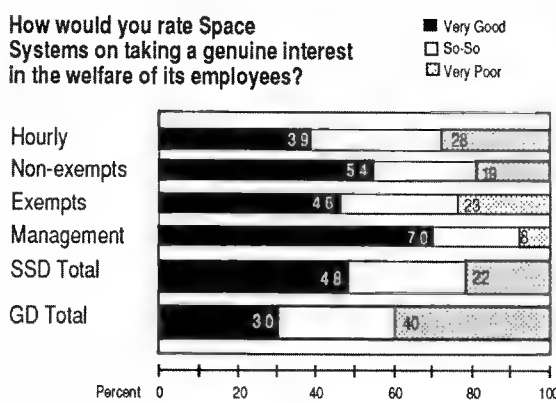
B. Human Relations

We rated the personal aspects of being employees here, including level of respectful treatment, existence of equal opportunities for all employees, consistency of policy administration, and Space Systems' interest in our welfare.

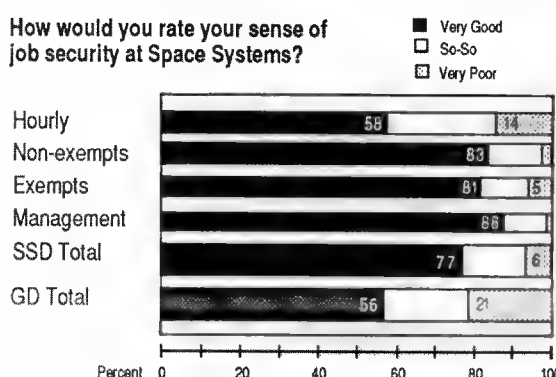
How would you rate the extent to which you are treated with respect and dignity, that is, as a responsible adult at Space Systems?



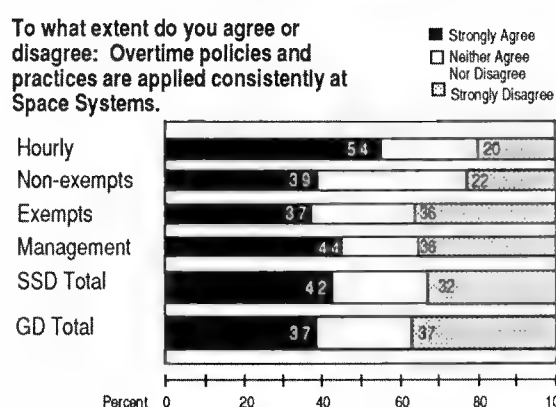
How would you rate Space Systems on taking a genuine interest in the welfare of its employees?



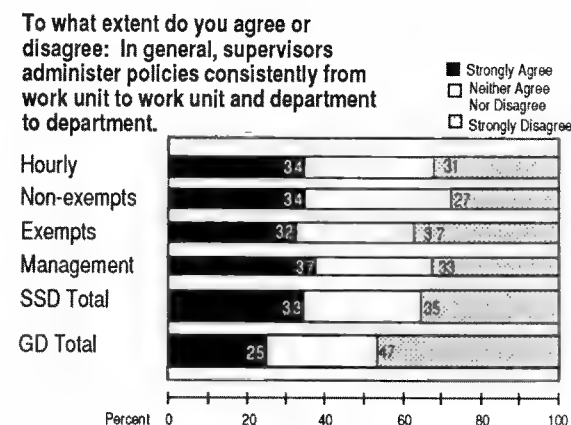
How would you rate your sense of job security at Space Systems?



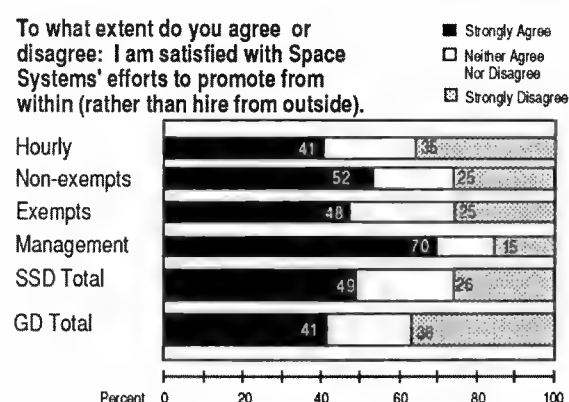
To what extent do you agree or disagree: Overtime policies and practices are applied consistently at Space Systems.



To what extent do you agree or disagree: In general, supervisors administer policies consistently from work unit to work unit and department to department.



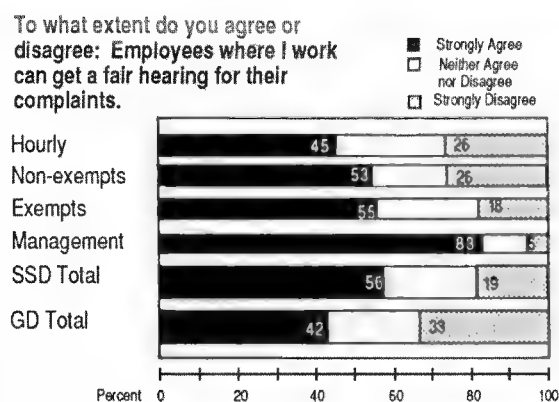
To what extent do you agree or disagree: I am satisfied with Space Systems' efforts to promote from within (rather than hire from outside).



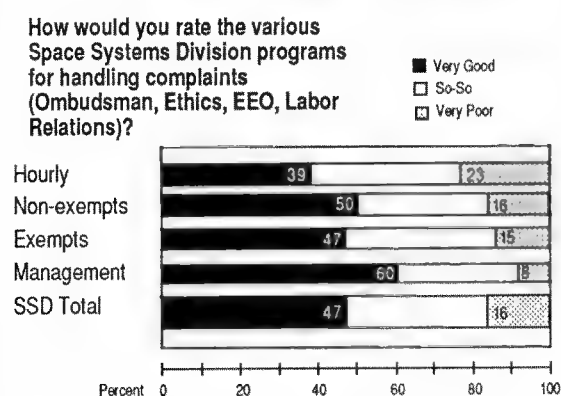
Pay, promotion, career development opportunities, or other employment practices

| Comments | Salaried | Hourly |
|---|----------|--------|
| Salary not keeping up with inflation/raise below inflation/salaries not competitive with area, with industry, within company | 28% | 14% |
| Promotions not given fairly/favoritism, nepotism, political/not based on accomplishments/based on one person's opinion | 10 | 17 |
| Pay and promotion procedures unclear | 10 | 7 |
| Little promotion from within/don't look hard enough inside/higher positions going to outsiders/inadequate job posting | 5 | 4 |
| No career development/handled poorly/never had a career development program, lack of advancement opportunities | 3 | 21 |
| Increase not related to performance/who you know/have to be part of right clique, brown nosers, be visible, appearance, etc./tied to tenure not performance | 12 | — |
| Need more liberal overtime policy/\$20 cap is wrong/should be overtime for professionals, management | 11 | — |
| Overtime handled poorly by management, too much overtime | — | 4 |
| Should be cost-of-living increases | — | 4 |
| Too few promotions/not enough opportunities/opportunities hurt by declining business/not equal opportunities | 95 | — |
| New hires earning more than current employees; need two-tier pay scale | 3 | 2 |
| Little opportunity for women | 3 | — |
| Need merit, incentive pay | — | 8 |
| Large difference in pay and promotion opportunities between hourly and salary employees | — | 3 |
| Performance reviews never given, except negative ones | — | 8 |
| Miscellaneous | 7 | 6 |

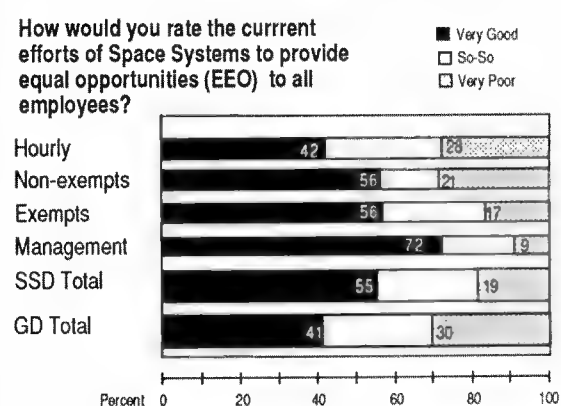
To what extent do you agree or disagree: Employees where I work can get a fair hearing for their complaints.



How would you rate the various Space Systems Division programs for handling complaints (Ombudsman, Ethics, EEO, Labor Relations)?



How would you rate the current efforts of Space Systems to provide equal opportunities (EEO) to all employees?

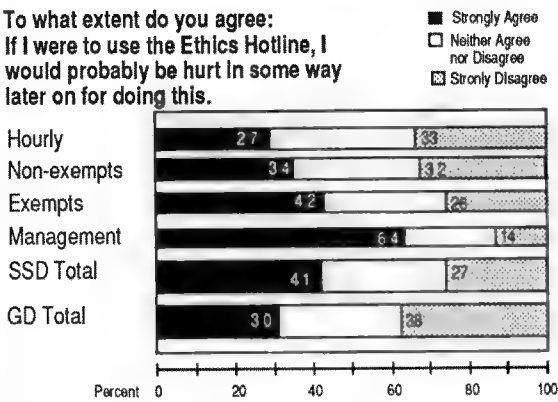
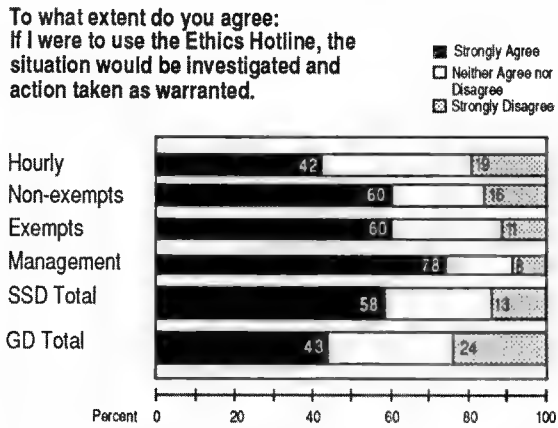
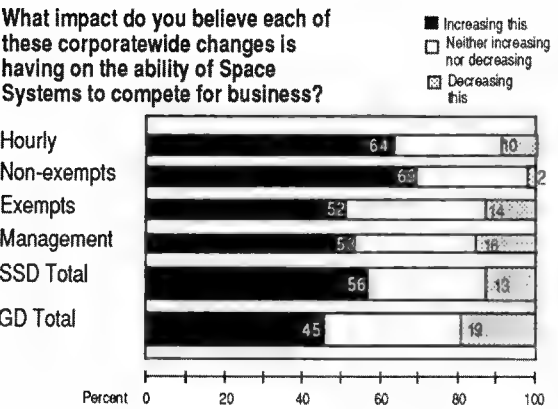
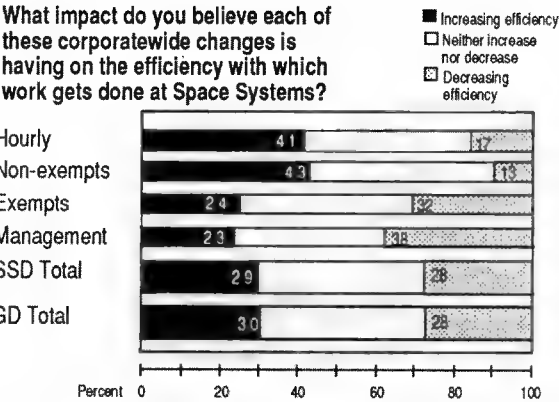
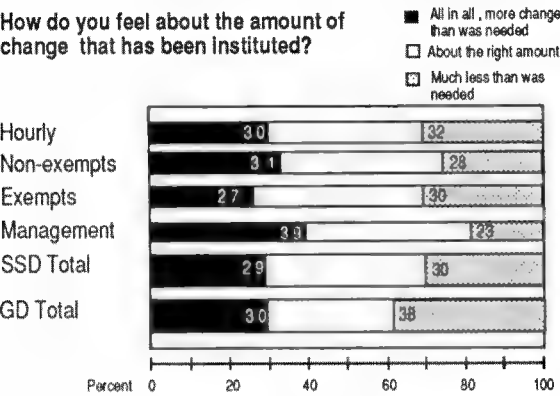
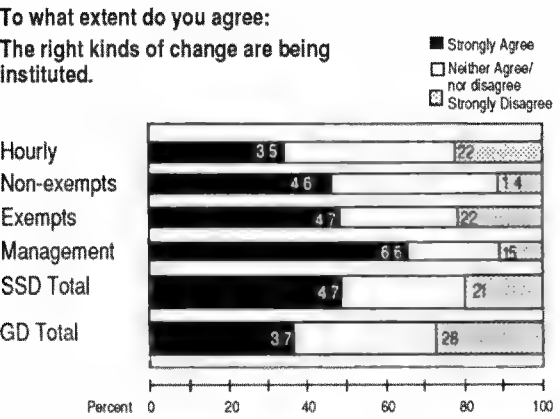
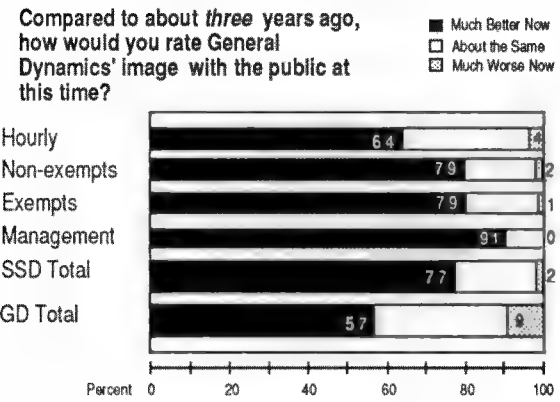
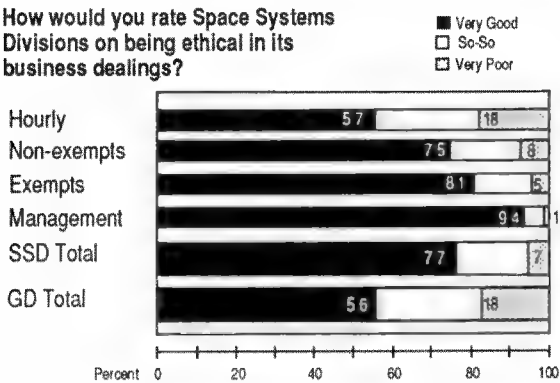


Analysis: A majority (69%) feel they are treated with dignity and respect. Yet slightly under one-half (48%) feel that the division takes a genuine interest in the welfare of employees.

Only one-third of the employees agree that supervisors administer policies consistently. Slightly over one-half of the employees feel the division is trying to provide equal opportunities and give employees a fair hearing for their complaints.

7. business practices

Explanation: We've changed a number of our business practices and administrative procedures in the last three years. In this section, we evaluated those changes and their impact. We also gave feedback on ethics and our image with the public.



Changes in business practices and administrative procedures (e.g., impact on your ability to do your work, extent to which implemented where you work):

| Comments | Salaried |
|--|----------|
| Time cards require too much time, too complicated, too difficult, too picky, time-consuming | 27% |
| Changes have created too much bureaucracy, too much paperwork/increased our administrative overhead/more than needed | 16 |
| Disagree with recording "all hours worked"/charge numbers discourage extra work/not compensated fairly | 14% |
| Needed changes have helped/procedures improved | 9 |
| Upper management involved in ethic problems, not us/directed towards wrong level | 9 |
| Changes have been superficial/cosmetic changes only | 5 |
| Ethics problems poorly handled/ineffective/waste of time to use ethics hotline | 5 |
| Don't feel safe using ethics hotline/don't trust it/fear retaliation | 3 |
| Miscellaneous | 12 |

NOTE: There were not enough hourly responses to provide categories of comment. However, of the write-in responses received, the major themes were:

- Not enough change/changes superficial, have not been implemented/have not been informed of changes
- Don't feel safe using ethics hotline/don't trust it/fear retaliation

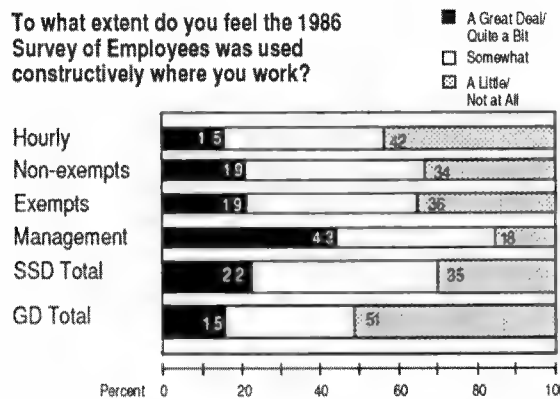
Analysis: More than three out of every four employees feel GD's public image has improved. Almost one-half of the employees (47%) say the right kinds of changes are being instituted in business and administrative practices. Many employees (56%) believe the changes are boosting Space Systems' competitive ability, but some (28%) are concerned that these changes are hurting efficiency.

Most employees (77%) feel Space Systems is ethical in its business dealings. Management had the highest response (94% favorable) to this question, while the hourly responses were considerably lower (57% favorable).

NEXT STEPS by Lisa Lawrence, Division Survey Manager

My Opinion Counts

The theme of this survey administration was "My Opinion Counts!" Now that the survey results are here, what does that mean for you and me? As you read in Dr. Lovelace's opening comments "It's not surveys that change things, it's people." So now, it's up to us. As you can see from the following graph, only 22% responded favorably when asked about the constructive use of the 1986 survey.



Increasing constructive action taken from the survey.

| Comments | Salaried |
|---|----------|
| Need to make changes; don't ignore results/didn't see any changes | 40% |
| Need more work groups/discussion on results | 11 |
| Listen more to employee needs, not just management's | 10 |
| More management-employee cooperation; more teamwork in general | 8 |
| Better communication between departments | 8 |
| More effective planning/less bureaucracy | 5 |
| Vacation plan didn't change | 5 |
| Miscellaneous | 11 |

NOTE: There were not enough hourly responses to provide categories of comment. However, of the write-in responses received, the major themes were:

- GD should use the information from the survey/need to take action on the information/take the survey seriously
- GD needs to listen closely/show concern for employee needs/talk to employees directly

This year, however, we want to do things better. The next step in the survey process—the feedback and action planning phase—will be more focused, concentrating on value-added activities. As feedback sessions are held throughout the division, strengths and weaknesses will be identified. Three to five of the most significant concerns will be prioritized for action.

At this point, seven issues have been identified at the overall division level. Each functional organization is in the process of selecting three to five key issues. Individual managers are also selecting issues to address. This process also allows cross-functional issues to be worked. The intent of the feedback and action planning is to increase the effectiveness of our entire division, at all levels and in all functions. The entire survey process is one link in our continuous improvement efforts.

ORBITER

GENERAL DYNAMICS SPACE SYSTEMS DIVISION

April 6, 1990

Tom Baranouskas Named Division Vice President and Controller

Tom Baranouskas is the newly appointed division vice president and controller.

Tom transferred to Space Systems from General Dynamics Land Systems Division, where he had been vice president and controller since 1986.

A General Dynamics employee since 1977, he began as a financial



specialist at the Fort Worth Division. He moved to the corporate office in 1979, where he was corporate manager of aerospace financial planning, working with the Pomona Division. In 1982, he was on the acquisition/transition team for Chrysler Defense, Inc. (now Land Systems) and he was named corporate director of financial planning for land systems and marine products. That same year, Tom transferred to Land Systems as controller of the Lima, Ohio plant.

Tom holds a bachelor's degree in mathematics from Tarleton State University in Texas and an MBA from the University of Dallas.

In addition to traditional financial reporting and forecasting, Tom's responsibilities include maintenance of effective financial and accounting control systems, acting as a catalyst for administrative excellence, and providing timely financial analysis.

Tom is excited about his assignment. "It's great to be in such an energetic and enthusiastic division with a commercial product that has such a bright future."

EPI Bonus Awarded at Vandenberg AFB

Vandenberg employees assigned to Departments 984, 985, and 986 received welcome and exciting news at an all-hands meeting March 23. Chuck Harter, director-Vandenberg Operations and Dick Neal, manager-Human Resources, announced a successful negotiation of the new launch service contract with the United States Air Force.

This agreement included an Employee Performance Incentive (EPI) provided by the customer in the amount of \$200,000 per launch of the Atlas E rockets at Vandenberg Air Force Base. The EPI is for all Atlas E launches with spacecraft assigned as they're called up between now and 1993.

The happy employees of those departments found they were eligible for the Employee Performance Incentive. The amount is figured simply for each successful launch; it is an equal share for

each eligible employee. It will be distributed as a lump sum minus taxes.

The Air Force has included this EPI program to encourage teamwork, to ensure mission success, and to provide recognition to employees for a job well done.

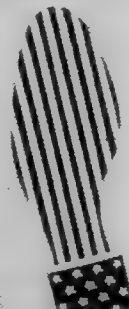


From left to right: John Simko, financial secretary/treasurer, IAM; Chuck Harter, director-Vandenberg Operations; Andy Barnes, Grand Lodge representative, IAM; Dick Neal, manager-Human Resources; and Steve Lee, president, Vandenberg IAM.

Put Your Best Foot Forward for WalkAmerica 1990

Saturday, April 28, 1990

Registration from 6:30 to 8:30 a.m.
at Mission Bay



For more information contact:
Kelly Foley, Space Systems
WalkAmerica Coordinator
Extension 39264

Rollout of First Commercial

CRRES Launch Scheduled for June at Cape Canaveral

Dr. John M. Klineberg, director of the National Aeronautics and Space Administration (NASA) Lewis Research Center, was the principal speaker at the rollout of AC-69 held south of Building 5 at Kearny Mesa on March 27.

The Atlas I will launch the Combined Release and Radiation Effects Satellite (CRRES) in June from Cape Canaveral. It was shipped to Florida this past week for the event.

CRRES will investigate the interactions of the earth's magnetosphere and ionosphere and will investigate the anomalies in space that affect satellite electronics, disrupt communications, radar, and navigational systems, and pose hazards to people living and working in space.

In his remarks at the event, Marty

Winkler,
Space
Systems
Division
vice
president
and
deputy
general
manager,
said,

"This is

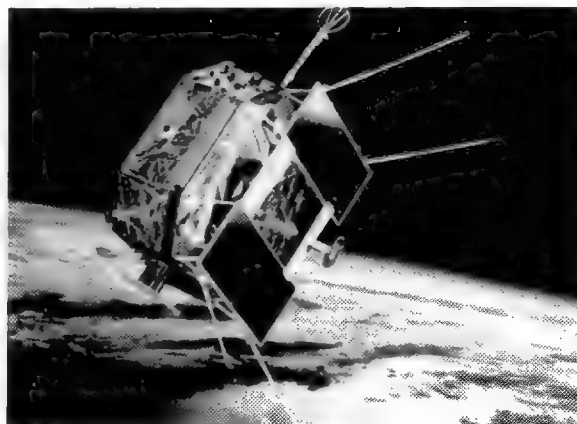
the beginning of a new era of a global, commercial launch services market. We have a lot of challenges ahead of us. Let me assure you that Space Systems and Commercial Launch Services are ready to meet those challenges."

The next speaker, Ed Squires, vice president of Production, recognized the total team work required to achieve this rollout. "Teamwork doesn't occur between organizations, it happens between people. It's the people of this division, our suppliers, subcontractors and our customers that make events like today possible. We all want to make the best quality product possible, but it takes the combined efforts of literally thousands of people to reach this goal."

Colonel Edward C. Gassman of DCAS praised Space Systems' job performance. He emphasized that out of a total of 120,000 welds on the AC-69 there was an acceptance rate of 99.7 percent. "You should be very proud of your workmanship," Colonel Gassman said. "That is a significant accomplishment."

CLS Vice President and Managing Director Charlie Lloyd, pointed out in his talk, that, "We have been getting ready to do business for the last three years. Now we are back to the business of our business — launching satellites." He added, "By far the most successful marketing events are successful launches."

Dr. Klineberg, as the keynote speaker, stated to the assembled Space Systems personnel, "The NASA Lewis Research Center has a 50-year history of



Artist's concept of CRRES

Space Systems has committed to building 60 Atlas launch vehicles. The company will invest more than \$400 million in improved production facilities, launch pad refurbishment, other capital improvements, and research and development.

The ceremony concluded with the presentation of an Atlas model to Dr. Klineberg by Marty Winkler.

**"By far, the most successful
marketing events are successful
launches."**

— Charlie Lloyd
Vice President & Managing Director,
Commercial Launch Services

technological
leadership,
meeting
national
needs for
aeronautics,
space
exploration,
and space
utilization
through
research,

technology, and system development. And for the past 30 years, the Lewis Center has had a unique relationship with General Dynamics, which I attribute to the exceptional performance brought about by the cooperative spirit and responsiveness all of you have shown in working with my colleagues at the center."

He said further, "Under the national space policy, federal agencies are to procure expendable launch services directly from the private sector. The Lewis Research Center is playing the lead role by managing the first commercial launch services contract with General Dynamics."



Vehicle



Dr. John M. Klineberg, proudly wearing his Atlas cap, holds up the Atlas model presented to him by the division.

Atlas Selection for SOHO Mission Announced

The National Aeronautics and Space Administration (NASA) has announced that the newest and most powerful member of the General Dynamics Atlas family of launch vehicles — Atlas IIAS — has been selected for the Solar and Heliospheric Observatory (SOHO) mission. This scientific endeavor is to conduct a coordinated examination of the sun.

The announcement of the selection was made by Dr. John Klineberg, director of the NASA Lewis Research Center, during the rollout of AC-69 on March 27.

The international SOHO mission, to be launched in 1995, is a cooperative effort among NASA,

the European Space Agency (ESA), and the Japanese Institute of Space and Aeronautical Science (ISAS). NASA will furnish the launch services, and ESA will provide the spacecraft and the major portion of the experiments. NASA and ISAS will also provide experiments.

The selection of Atlas IIAS is the first procurement of the most powerful Atlas by NASA. This version of Atlas includes four Castor IVA solid rocket motors and has a payload of 8,000 pounds to geosynchronous transfer orbit.

Selection of the Atlas IIAS for SOHO has increased launch commitments to 33. That includes 23 commercial and 10 government missions.

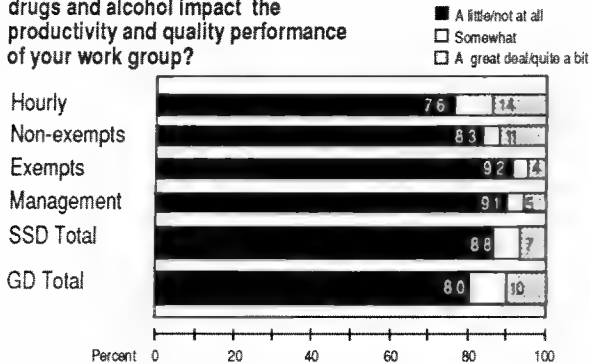


Survey Clarification

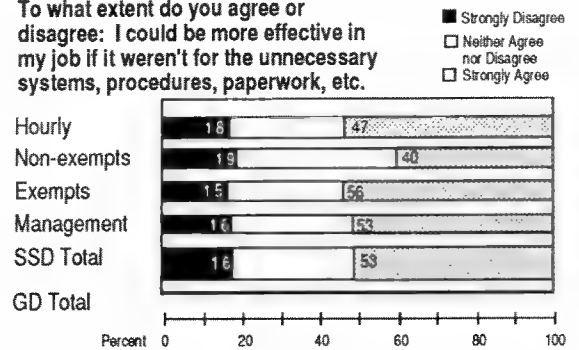
The wording on some of the survey questions and the resulting responses have caused some confusion. Five questions were asked so that a negative answer would have been the most positive response.

The Survey Report printed in the March 23 *Orbiter* reflected the correct responses for these questions. However, the legends were incorrect. The following graphs show the corrected legends. If you have any questions on any of the survey items, please call Lisa Lawrence at extension 65706.

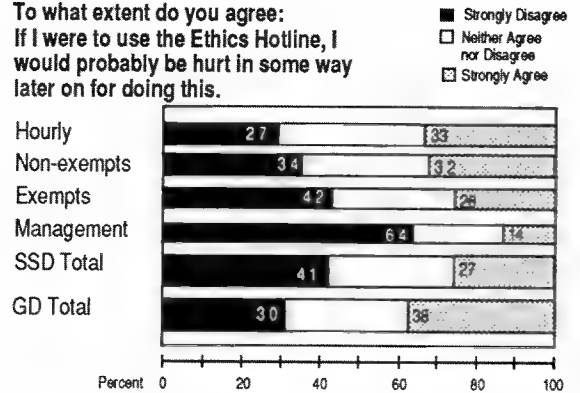
To what extent does the use/abuse of drugs and alcohol impact the productivity and quality performance of your work group?



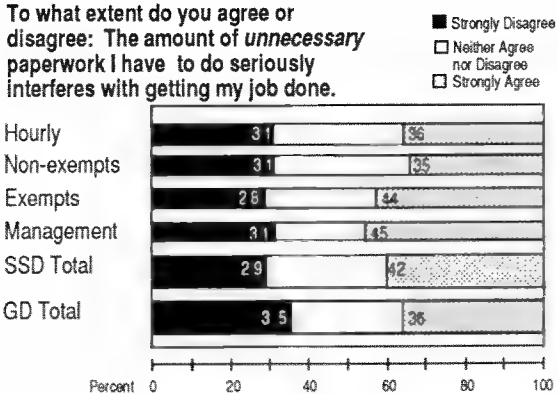
To what extent do you agree or disagree: I could be more effective in my job if it weren't for the unnecessary systems, procedures, paperwork, etc.



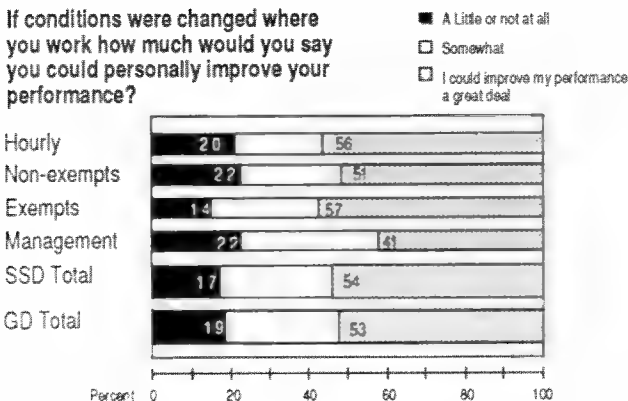
To what extent do you agree: If I were to use the Ethics Hotline, I would probably be hurt in some way later on for doing this.



To what extent do you agree or disagree: The amount of unnecessary paperwork I have to do seriously interferes with getting my job done.



If conditions were changed where you work how much would you say you could personally improve your performance?



Come celebrate the delivery of the
First Commercial Atlas/Centaur
at a special all-hands

BARBECUE

Friday, April 6, 1990
at CRA, Missile Park
from 4:00 to 8:00 p.m.

Refreshments... Come and Enjoy!

Host:
Ben Wier
Division Vice President &
Program Director Atlas Programs

Space Systems employment for
the week ending March 23, 1990 was 4,860.

ORBITER

GENERAL DYNAMICS SPACE SYSTEMS DIVISION

May 4, 1990

Rogers Visits CCAFS Space Launch Complex

By Rita Jackson with Russ Thomas

Herb Rogers, president and chief operating officer of General Dynamics Corporation, visited our Cape Canaveral, Florida operations during the last week in April. He had previously visited the facility in January 1988 when the company had committed to building 18 Atlas I launch vehicles.

During this latest visit, he spoke to a gathering of all Space Systems operation employees and told them he'd had concerns during the 1988 visit about our launch capabilities and facilities. He expressed his fears about facilities that had deteriorated from years of neglect due to plans to phase out expendable launch vehicles. He made this return in 1990 to see the results of General Dynamics' commitment to support Space Systems Division as the premier expendable launch vehicle company and to view the investment made in restoring SLC 36B to first-rate operational condition.

Mr. Rogers also spoke about the big picture of a changing defense budget in the 1990s and described General Dynamics Corporation as healthy and

able to ride out the downturn in spending. He cited Space Systems and Cessna as the two divisions expected to grow in spite of the reductions. The launch of AC-69 in June 1990 will be the first important step in both our military and commercial launch programs. The prospect of 60 launches makes it the largest single privately sponsored venture in the history of commercial space. He said it will turn space from a political and national objective to a commercial business.

Bringing Total Quality Management (TQM) into his speech, Rogers said, "TQM applies to everyone and will be a necessary tool to reduce the launch center time, allowing us to launch ten to as many as twelve vehicles per year. The increasing world competition in expendable launches will require continuous improvement to be able to meet the challenge."

Rogers acknowledged the Titan/Centaur team for their successful Prototype Equipment Module (PEM) testing and commended the quality of the work force at Cape Canaveral. He proposed that high flexibility in meeting customers needs in relation to satellite production schedules and launch windows will mean developing many alternate plans for launch manifests.

A tour of the Titan/Centaur Vertical Integration Building Cell and SLC 36 followed the morning's all-hands meeting. This also included an AC-69 walkdown.

Dr. Alan Lovelace, Ben Wier, and Russ Thomas accompanied the president and chief operating officer during the tour. Rogers obviously enjoyed the opportunity to interface with launch team personnel. He was pleased with the progress made in the past two years.



Jerry Leonard, CCAFS Employee of the Year, (right) greets GD's president and chief operating officer Herb Rogers (left) and Dr. Alan Lovelace, vice president and general manager of Space Systems, (center) during a visit to Launch Tower 36B.

CLS Establishes Office in Belgium

Commercial Launch Services (CLS) is establishing a program office in Brussels, Belgium, to support its marketing and customer liaison efforts for Atlas launch vehicles.

"Our market base has broadened and we recognize that it makes good business sense to have a presence in Europe to interact with customers," said Charlie Lloyd, vice president and managing director of CLS. "Our relationship with European companies requires day-to-day attention in providing the necessary support for new and existing customers."

William A. Houtz, who joined the corporation in 1983, has been named director of the Brussels office.

Previously, he was corporate marketing manager-Europe for General Dynamics International Corporation (GDIC).



The decision to establish an office in Europe was reinforced when the National Aeronautical and Space Administration announced it had selected Atlas for the Solar and Heliospheric Observatory (SOHO) mission.

CLS will also launch a communications satellite for the European Telecommunications Satellite Organization, two satellites for Orion, and three for the International Telecommunications Satellite Organization. It will also sign an agreement with the Italian Space Agency for Italy's Space Astronomy X-ray satellite.

General Dynamics Replaces Stolen Computer for Grateful Fourth Graders

When the fourth graders of Room 6 at Ocean Beach Elementary School returned from spring break, they were looking forward to using the brand-new computer they'd recently acquired. But to the kids' bitter disappointment they found that someone had broken into their classroom and stolen the equipment during the time the school was closed.

What made it especially heartbreaking was the fact the children acquired the computer through their own efforts by collecting \$175,000 worth of receipts from Von's supermarkets over a four month period. One girl had even stood in front of her neighborhood Vons market and asked departing customers for their receipts.

The grocery chain administers a program entitled *Apples for Students* in which they donate computers in exchange for receipts from their stores.

When Alda Jorgenson, director of Space Systems' community relations program, heard of the students' misfortune, she contacted Marc Corless, DSD community relations administrator, and Joyce Jaskolski, DSD asset coordinator, to see if there was surplus equipment available to donate to the kids.

Marc and Joyce not only came through with an Apple IIE computer but an Apple dot matrix printer and software too.

On the morning of April 23, four very happy and excited kids took possession of the computer to take back to their classmates. Frank Petersen, school principal, said, "Donating this computer equipment to the students does more than replace some stolen property. It renews these young people's faith in their fellow humans, letting them know there are still good people in the world."

The kids themselves expressed their gratitude in letters sent to General Dynamics. Some of the thoughts they passed on were:

We are lucky to have someone like you to help us out — when someone took our computer we were very sad — you really surprised us when we heard the news — thanks a bunch — thank you for being our friend — you are a wonderful company — we in Room 6 have new friends — thanks, thanks so very much!

But the best compliment of all was the kids asking Principal Petersen if Alda Jorgenson could be their teacher next year.

Inside Space . . .

Ron Stoneburner, vice president of Contracts and Estimating, will host the annual **NMA Scholarship & American Enterprise Night** to be held May 17. See your NMA booster for more details . . . **Steve Hajduk** of Mail Management Services and **Mark Hibbard** of Ground Systems recently completed a 30-mile, 5-city bike tour in a ride to raise money for American Youth Hostels . . . **Gene Hepler** has been appointed manager, Total Quality Management (TQM). He will have the responsibility for Space Systems Division's TQM program. His prior assignment was TQM manager at North Island . . . **Jim Decker** of Manufacturing Technology received an award of \$6900 for developing a system that allows scrapped high-cost stainless steel coil stock to be used for training of welding personnel. He also established a computer program required to implement the new Space Systems' laser cutting system . . . **Jason Alcoser**, son of **Ben Alcoser** who works in Manufacturing Control, has recently received an appointment to the United States Naval Academy . . . **Engineering Information Exchange** folks are having a couple of **EIE Brown Bag Meetings** in the CP4-2 MIC Room this month. The first is scheduled for May 8 at 11:45 a.m. and the other on May 15 at 11:30.



A happy group of people are shown gathered around the Apple computer and printer donated to Ocean Beach Elementary's fourth graders in Room 6. From left to right are Sarah Colwell, Sara Devlin, Angela Marvin, Mike Hinman, Marc Corless of DSD, Laurie Luxembourg who is an involved parent with the school, Principal Frank Petersen, and Joyce Jaskolski of DSD.

Retirees

Thanks and good luck to these Space Systems employees who recently retired:

- Daniel Bain**, Reliability Engineer, Senior, Reliability, 30 years
- Lew Bruun**, Manager-Manufacturing Engineering, Space Assembly Planning, 30 years
- Arlona Diggins**, Configuration Management Analyst, Senior, Configuration Management, 38 years
- John Heathman**, Engineering Specialist, Special Status Employees, 33 years
- Anthony Nauyokas**, Engineer, Senior, Systems Integration, 11 years
- Bill Teter**, Inspector-Launch Service Field Mechanic-Offsite, Quality Assurance Prelaunch, 32 years

Titan/Centaur Progress

By Russ Thomas and Paul Kopcha

TC-8 has completed final assembly and factory check-out was initiated with an April 13, 1990 power-on. Checkout tasks are proceeding to expedite moving the vehicle to the Thermal Acoustic Test Facility.

TC-9 completed major weld and wash station at Plant 19; moved to Kearny Mesa pressure pit on March 5, 1990; final assembly tasks started March 12, 1990.

Structural test tank completed major weld repair satisfactorily. This tank repair is a result of the excellent job done by the Tooling, Planning, Production, and Quality personnel at Plant 19. Congratulations and thanks to all personnel involved. It has completed wash station and pressure pit testing and is now in final assembly.

The structural test 8 hard point load testing was completed at the Sycamore Test Facility during the week of March 5, 1990. This test installed a Titan/Centaur forward adapter with a simulated Centaur tank while our test tank was being repaired at Plant 19; test loading concentrated on the conical portion of the forward adapter. The Prototype Equipment Module (PEM) was shipped from San Diego to CCAFS for the purpose of validating the Centaur Ground Electronic Systems from the Launch Operations Control Center (LOCC) to the Vertical Integration Building (VIB). The PEM testing at CCAFS was successfully completed and the PEM is currently back in San Diego to support continued software development. Later this year, the PEM will be returned to CCAFS to support validation of LC-41 systems.

The Inertial Measurement Group (IMG) units for TC-9, -10, and -11 have been accepted at Honeywell and are awaiting shipment; future vehicles will incorporate the Inertial Navigation Unit (INU) which is currently in development. Gulton delivered the TC-9 Data Acquisition System (DAS) and has initiated qualification of the Block II DAS. Pratt & Whitney has delivered four shipsets of RL-10 engines and one more is in the acceptance process.

Our sister divisions continue to provide outstanding support. Harlingen is delivering their first forward adapter which will be installed on TC-9; Convair continues to deliver splice plates/composite panels ahead of schedule. Electronics Division is supporting our avionics box requirements.

Promotions

Congratulations to these people who recently received promotions. The list includes all hourly, salaried, and management support.

| | | |
|---------------------|---------------------|-----------------------|
| Michelle Allen | Toni Gonzales | Nancy Michels |
| Jerome Anderson | Cathy Gordon | Kathy Milhaud |
| Nancy Anderson-Metz | Thomas Gorrie | Diane Minor |
| Doug Armstrong | Climmer Graham | Pete Morris |
| Winston Armstrong | Chuck Grasmick | Joe Narde |
| Steve Babb | Michael Grigsby | Minh Nguyen |
| Tony Barnini | Dan Grotefend | Renee Parekh |
| Luci Bell | David Grove | Jeff Pate |
| Nancy Blaha | Mike Gusha | Kathy Peak-Jeremy |
| Stephen Bourg | Randy Hale | Sheryl Plumley |
| Shawn Bresnahan | David Hamilton | Harriet Prevolos |
| Les Browne | Lura Hewitt | Cathy Pugliese |
| Karl Bunch | Dennis Hoff | Davetta Red |
| Tom Chapman | Allen Honegger | Willa Reynolds |
| Darryl Chizlett | Ted Hopkins | Randall Reynolds, Jr. |
| Norma Claar | Kevin Jensen | Kristy Rice |
| John Clinger | Brian Johnson | Theresa Robinson |
| Timothy Coburn | Karen Kemper | Mark Schultz |
| Curtis Cowan | Tim Kilbarger | Michael Schweitzer |
| Dora Derango | Gary Knight | Linda Sharp |
| Beth Dickerson | Teresa Kosmas | Charles Stevens |
| Reynaldo Don | Kevin Ladner | Scott Stewart |
| Ray Ellis | Michael Lesniak | Jeffrey Strom |
| Lucy En | Diane Lewis | Michael Terrones |
| Brian Felber | Vince Lima | Mathew Thompson |
| Craig Fitzgibbon | Peggy Little | Nina Wallace |
| Jack Funkhauser | Bruce MacRobbie | Ed Washer |
| Tamoria Gallacher | Danny Marshall | Nadine Williams |
| Jerry Garrett | Harold McAvenia III | Ezell Wills, Jr. |
| Steven Gastelum | Bernie Meissner | Robert Wilson |
| Steven Goebel | Kathy Mellor | |

Taxing Tuition Reimbursements

From General Dynamics Corporate Public Affairs

Every year hundreds of General Dynamics employees attend classes at local colleges, universities, and technical schools. Most of these employees participate in General Dynamics' tuition reimbursement program, which pays the tuition and related fees for approved classes.

Tuition reimbursement for undergraduate courses is not taxed as personal income. Tax liability for graduate courses depends on the degree program and the employee's job. However, the tax exemption for undergraduate tuition reimbursement ends September 30.

Unless Congress enacts new legislation, all tuition reimbursements after September 30 will be taxed as personal income. This new legislation that Congress is considering would permanently exempt all tuition reimbursement from taxation, including that for graduate courses.

Additional information on the potential taxation of tuition reimbursements and the legislation pending in Congress is available from Teresa Cabading at extension 65702.

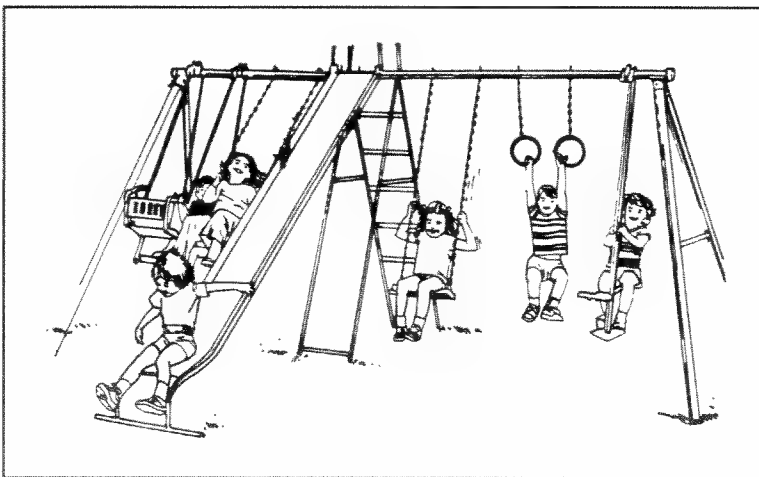
CRA Day Camp for Kids Begins Next Month

Do you want your child care problems solved for the summer? Or perhaps you're just looking for something to make that time of the year a lot more interesting for the kids in your family.

If so, it is heartily recommended that you check out the General Dynamics CRA and Mission Valley YMCA Day Camp at CRA Missile Park in Kearny Mesa.

You have a choice of one, several or all of the six weekly sessions that begin June 25 and continue through August 1. The themes planned for each of these exciting weeks is as follows: Week 1, Space — Week 2, Holidays — Week 3, Around the

Word — Week 4, Old West — Week 5, Super Heroes — Week 6, Fantasy.



These exciting programs are open to children ages 6 through 12. The

supervised activities begin at 7:00 a.m. and continue until 6:00 p.m. Drop off will be at Missile Park.

Varied activities have been planned that give the attending children choices of an active play area, coloring table, board/table games, and a rest area.

The cost is \$90 a week to YMCA members and \$112 to non-members. General Dynamics employees will be given a complimentary YMCA youth membership which is a \$40 per year value.

Brochures are available at the Space Systems Child Care Resource Center in Building 26 or call CRA at 39918 for more details.

Commuting Survey Scheduled for May

General Dynamics is continuing in its efforts to reduce traffic congestion, improve air quality, conserve energy, and save commuting dollars. This is also in compliance with the ordinance recently passed by the San Diego City Council. This new law is called *Traffic Demand Management* (TDM). It went into effect January 1, 1990.

A Transportation Survey will be passed out later this month and all employees are being asked to complete the questionnaire concerning their daily commute trip and mode of travel to work.

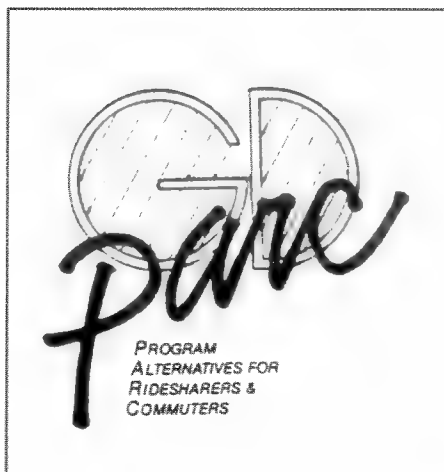
In addition to obtaining information, the survey will give employees a chance to request a free ride-matching list. This document will make it easy to share rides on a regular or emergency basis.

Even if you are already carpooling or not interested in participating in such a program at this time, your input is still needed to establish commuting patterns and support incentives for present and future carpoolers.

If you are currently using an alternate style of transportation to get to work, we would like to hear about your experiences — both good and bad — and any comments or suggestions you may have regarding the method

you use to arrive at your job everyday.

Also, if any others have input on alternate styles of transportation, we would also like to give you a chance to "sound off." Send any opinions and ideas as to implementation, problems you foresee, or other observances to the *Orbiter*, MZ 22-7000 or call Nancy Kimerly at 77392.



Shown here is the new General Dynamics logo for PARC - Program Alternatives for Ridesharers and Commuters

Space Systems employment for the week ending April 26, 1990 was 4,835.

The Orbiter

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Orbiter
P.O. Box 85990, MZ 22-7000
San Diego, CA 92138

Patrick Andrews, Editor
(619) 573-9373

Rita Jackson, Reporter
CCAFS, (407) 853-7571

Camille Kahlert, Reporter
Huntsville, (205) 880-0660

Lela Reddekopp, Reporter
VAFB, (805) 866-9556

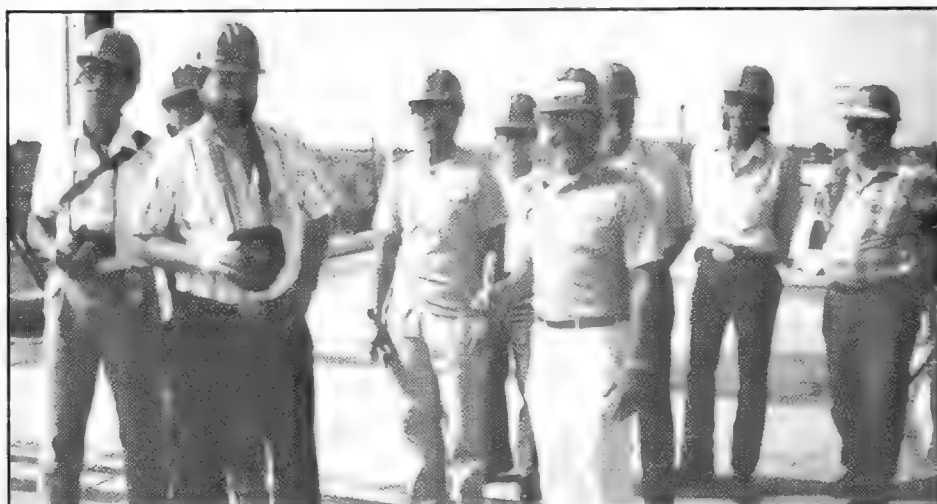
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is an **Equal Opportunity Employer**

ORBITER

GENERAL DYNAMICS SPACE SYSTEMS DIVISION

June 15, 1990

CCAFS Hosts Pratt & Whitney on Launch Site Tour



Les Browne, CCAFS security officer (standing in front at the right), escorts a group of Pratt & Whitney employees from the ramp up to the Centaur Interstage Adapter Interface at Level 11 of the mobile service tower.



Pratt & Whitney employees are shown awaiting their turn to view the RL-10 engines during a visit to CCAFS.

General Dynamics Space Systems Cape Canaveral operations received a request earlier this spring from Virgil Muilenberg, GDSS Pratt & Whitney RL-10 program management, to bring a group of visitors to the launch site. The visitors were employees who manufacture, assemble, and test the Centaur's RL-10 engines. The employees wanted to see their work in place on the launch vehicle.

On Saturday, May 19, 66 Pratt & Whitney employees rode up in buses to the base of the ramp at Launch Complex 36B for a trip up the tower and a chance to see their engines in place on Atlas/Centaur 69. The employees were from the manufacturing, assembly, and test operations at the Pratt & Whitney office in West Palm Beach, Florida.

In addition to seeing their product on the launch vehicle, the visitors were given a briefing on the launch processing cycle and a tour of the blockhouse by Jim Codd, manager of Customer Relations. Frank Watkins, director of

Base Operations, greeted the guests and welcomed them to Cape Canaveral Air Force Station. Pratt & Whitney employees, some who had worked for

more than 20 years on RL-10 engines, were thrilled with their first chance to see them in place. They will have a special interest in the launch of AC-69.



GD employee Sebastian Pellerito, launch service final electrical inspector (on the right), explains photography rules and regulations to the Pratt & Whitney visitors.

Retirees

Thanks and good luck to these Space Systems employees who recently retired:

Jere Callahan, Engineer, Senior, Thermal Control, 4 years

Don Charhut, Director - Business Development, Commercial Launch Services, 8 years

Charles Dunkle, Quality Assurance Specialist, Quality Verification, 25 years

Robert Dyer, Painter - Maintenance, Plant Services-Operations, 13 years

Lura M. Hewitt, Launch Service Technician, Senior, Prelaunch Services, 12 years

Ellie Hoffmaster, Executive Secretary, Productivity and Competition, 22 years

David Sikute, Program Control Analyst, Senior, Scheduling, 5 years

Midway Secured Parking Lot Hours of Operation

Open: 5:00 a.m.

Close: 8:00 a.m.

Open: 1:00 p.m.

Close: 5:00 p.m.

Open: 11:00 p.m.

Close: 1:00 a.m.

The hours of operation apply to the motorized vehicle gate as well as the pedestrian gate. The lot will be closed at other times unless an emergency exists. For exit during an emergency, notify the guard at the main gate of Plant 19.

An adjacent unsecured parking lot will remain open at all times for employees who choose not to be confined to the above hours of operation.

For further information, call Industrial Security at 75325.

Child Care Discounts Offered to GD Employees

Here's some good news for folks struggling with high child care costs. Discounts are available for GD employees at the following child care centers:

Gerber Children's Centers/Palo Alto Preschools will provide General Dynamics employees with a coupon valid for a free registration. Once enrollment of 20 children of GD employees is maintained, Gerber will offer a 10% discount from the regular tuition rates.

La Petite Academy will provide General Dynamics employees with a 10% discount off the normal weekly tuition rate. The discount is available at any La Petite Academy in San Diego on a space available basis. The discount applies to tuition only and is not applicable to a child already receiving a discount from La Petite Academy, registration fees, or any special programs.

Children's World is extending an offer for a 10% discount on tuition rates for General Dynamics employees whose children are enrolled in any of the San Diego-based centers, provided that an enrollment of 35 children of GD employees is maintained.

Judy Palmer School agrees to extend a 5% discount off normal monthly tuition rates.

If you have children enrolled at any of the above centers, be sure to let the center know that you are a General Dynamics employee.

Additionally, there are 10 family daycare providers who will discount services from 10% to 20% per month.

Any General Dynamics employee may obtain information regarding these centers/discounts, including Gerber's free registration coupon, from the following locations: Western Center Family Care Resource Center at Kearny Mesa, Building 77, 2nd floor breakroom; and Space Systems Family Care Resource Center located at Kearny Mesa, Building 26, 1st floor, Column E22. Lindbergh Field and Plant 19 employees may obtain the free coupon from the Employee Benefits Lindbergh Field office in Building 16.

Inside Space . . .

The requirements for **Preferred Parking for Carpoolers** have been changed from 3 persons per car to 2 persons . . . Don't forget to complete and return the **San Diego Transportation Survey Form** you received. This is a requirement for all large companies in San Diego . . . Employee Benefits has one **Retirement Seminar** left on this year's schedule. Beginning October 17, the sessions will run once a week for five weeks from 5:30 to 7:30 p.m. These seminars cover Social Security and company retirement benefits as well as other financial aspects of those "Golden Years." Call 39911 for more information . . . it seems there is a hero among us. **Bob Di Tolla**, an engineer specialist in Framed Structure Analysis, acted quickly and extinguished an electrical fire in CP4 that was caused by a wall heater . . . June 24-30 has been designated as **National Safety Week** by the American Society of Safety Engineers. The theme for the week will be *Play it straight for safety's sake!* . . . if you're looking for something constructive and beneficial for your kids to do this summer, think about sending them to **Aerocenter '90**. This is a live-in, six-day summer aviation and space sciences camp for seventh and eighth-grade students. There are four sessions running from July 8 through August 4. Registration information is available at 232-8322 . . . **Cardiopulmonary Resuscitation (CPR) classes** are scheduled for Monday, June 18, and Monday, July 16, in Room D of the CRA. Classes are from 4:45 to 8:45 p.m. and cost \$15.00. Register and pay in the CRA Health-Fitness Center or call 39921 . . . **Engineering Information Exchange (EIEx)** group is holding a seminar on **Atlas/Centaur Mission Capabilities** which will be presented by **Rich Waterman** (Trajectory and Performance) at 11:30 a.m., Tuesday, June 19, in the CP4 MIC Room . . . **Host Families** are needed for **European exchange students**. For more information, call **Shelly Deibert** at 49032.

"80% of volunteerism is done by 20% of the people."

Community Service Award Given to Anthony Coker-Diaz

Alda Jorgenson, director of Community Relations, hosted an award breakfast to recognize Space Systems employees nominated to receive the GD Community Service Award.

Vice President and General Manager Al Lovelace opened the award presentation with a talk in which he stated, "Volunteerism is alive and well here in Space Systems. It is an honor to be with such people as you this morning." He went on to introduce the principal speaker at the event, Peter Stark, a specialist in leadership and management training who has been recognized for his many hours of volunteer work as an immediate Past Chairman of the Board of the San Diego Hospice.

In his speech to the nominees, their supervisors, and division staff, Mr. Stark said, "I am among a group of people who make this community's volunteer activities really function. 80% of volunteerism is done by 20% of the people." He went on to say that the extra effort of community volunteers makes a big difference in the lives of people and organizations who need help or offer aid to others. "That's what keeps us going back — we make a difference. We are the driving force."

Dr. Lovelace announced the winner of the 1989 Community Service Award for Space Systems, Anthony Coker-Diaz. General Dynamics will be making a \$1,000 contribution to the San Diego AIDS Project, the organization for which Anthony volunteered his many hours of personal time and service.

Anthony accepted the honor by thanking Space Systems for fostering community Service and his supervisors for helping him to balance his volunteer activities with his professional life.



Pictured after the Community Service Award Breakfast are Dr. Al Lovelace, vice president and general manager of Space Systems Division; Peter Stark, speaker at the event; Anthony Coker-Diaz, 1989's Community Service Award winner; and Jack Lambert, Manufacturing director.

Dr. Lovelace went on to thank the other 29 award nominees and presented them with certificates of appreciation. Those honored were:

Enriqueta Aguirre — San Ysidro Activities Center
Kathryn Bailey — Department of the Area Agency on Aging-Ombuds Program
Julie Davis — Big Sisters
Josie Dawson — Special Olympics
Stan Domino — Elementary Institute of Science
Rita Figaro — San Diego Council of Black Engineers and Scientists
Gayle Frank — CONTRIB
Claude Freamer — Boy Scouts of America
Ann Goplen — Canine Companions for Independence
Ping Gordo — The Storefront
Terrie Hamen — 15th District PTA, VAFB
Joe Hancock — Boy Scouts of America
Catherine Happersett — Read San Diego
Mike Holguin — San Diego Church of Christ
Shirl Krystek — Salvation Army Homeless Outreach Program

Tim Larson — Laurel Bible Chapel
Dave Martz — Pop Warner Football
Emma Matthews — Jammin' for Jesus Ministries
Mike McDonald — Civil Air Patrol and American Red Cross
Mark Moeller — MATHCOUNTS
Patty Pierson — The Bridge
Demetria Robinson — Salvation Army
Garrett Lee Skrobot — Students for the Exploration and Development of Space, CCAFS
Sandra Sloan — Hillcrest Receiving Center
George Stoebel — Local Community of San Ysidro
Stan Turner — Boy Scouts of America
Carl Wannamaker — American Red Cross
Ed Weingartner — Casa de la Esperanza (Mexican Orphanage)
Grant Williams — I Love A Clean San Diego

Recognition was also given to Denise Garcia and Carolyn Goudy, San Diego State interns assigned to Community Relations, who aided in the presentation.

Alda Jorgenson closed the event by saying, "I was humbled while reading the nominations that described your personal commitments to the organizations you represent. Your contributions of time and service helping others outside of work should continue to be recognized by your supervision and Space Systems Division. I can't thank you enough for your fine representation of this company in the community. I hope in the future we will be able to hear from numerous other Space Systems employees who are active volunteers in community service."



The division's Community Service Award nominees are shown after receiving their certificates.

Space Systems Division Given New Zip Codes

Because of an increase in the volume of mail delivered to the division, the U.S. Postal Service has assigned Space Systems a new unique zip code known as Zip + 4.

The old zip codes will continue to be recognized for one year. Forms Control will use the new code when forms, envelopes, etc. are ordered. Please notify your correspondents of the new zip + 4 codes as shown below:

**General Dynamics Space Systems
Division**
P.O. Box 85990
San Diego, CA 92186-5990

**General Dynamics Space Systems
Division**
Purchasing Department
P.O. Box 85212
San Diego, CA 92186-5212

**General Dynamics Space Systems
Division**
Accounts Payable
P.O. Box 85462
San Diego, CA 92186-5462

Commercial Launch Services
P.O. Box 85911
San Diego, CA 92186-5911

Space Systems employment for the week ending June 1, 1990, was 4,798.

Titan/Centaur Program Progress Continues

By Paul Kopcha

TC-8 has completed factory checkout with the successful performance of the Mission Simulation Test this week. The vehicle now moves into the Thermal-Acoustic Test Facility (TATF).

TC-9 continues making progress in final assembly at Kearny Mesa.

TC-10 completed Major Weld at Plant 19. Later this month, it will be moved to the Wash Station. Internal cleaning and installation of internal tank hardware will be accomplished at Plant 19 prior to shipping the propellant tank assembly to Kearny Mesa.

TC-11 is in the final weld operations of the Major Weld station at Plant 19.

The Structural Test Tank was moved into TATF on May 19 for installation of the insulation blanket and some miscellaneous hardware. After successful completion of those tasks, the tank was moved to the Sycamore Canyon Test Site, where it will be subjected to various insulation and structural testing over the next several months.

Two more shipsets of Pratt & Whitney engines have been delivered. This covers engine requirements through TC-14. Gulton has delivered the final Block I version of the Data Acquisition System (DAS) for TC-11. Block II DAS qualification nears completion.

Honeywell reached a major milestone in the Inertial Navigation Unit (INU) development with receipt of the radiation hardened processor chipsets for the INU qualification unit. Qualification is scheduled to begin this September. TQM Process Action Teams have been formed

jointly with each of our major subcontractors. Reduction in hardware buyoff span time is their first objective.

We continued to receive excellent support from our sister divisions. Fort Worth delivered the first two separation systems for TC-8 and TC-9. Harlingen has completed the fabrication of the TC-11 Aft Adapter.

ORBITER
GENERAL DYNAMICS SPACE SYSTEMS DIVISION

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Orbiter

P.O. Box 85990, MZ 22-7000
San Diego, CA 92138

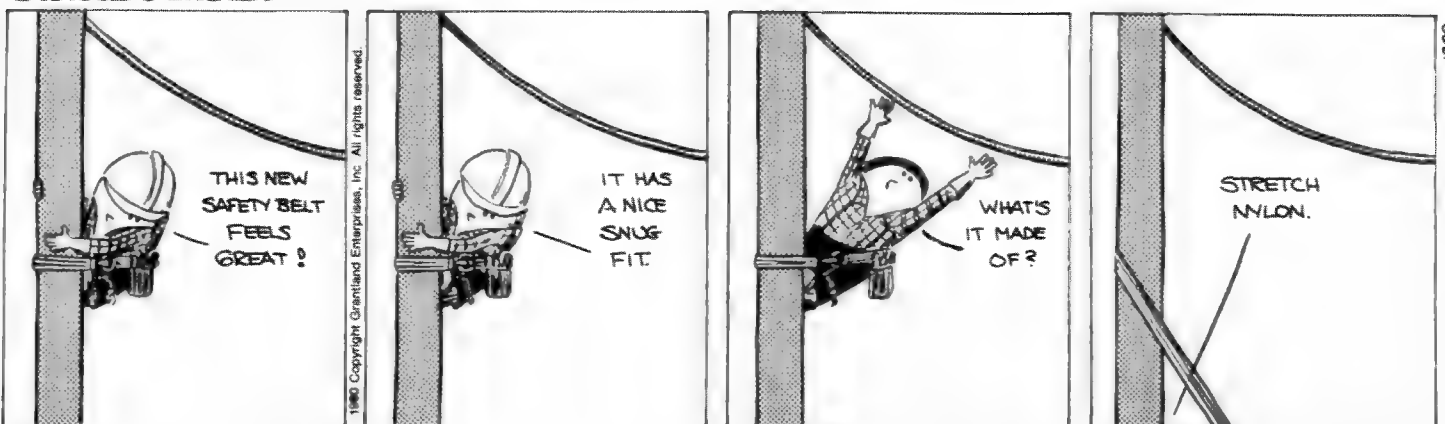
Patrick Andrews, Editor
(619) 573-9373

Rita Jackson, Reporter
CCAFS, (407) 853-7571

Camille Kahlert, Reporter
Huntsville, (205) 880-0660

Lela Reddekopp, Reporter
VAFB, (805) 866-9556

GRANTLAND®





July 13, 1990

Safety Contest Winners Honored

The Quality Assurance Failure Analysis Lab, On-Board Producibility, and Tool Manufacturing, were the three winning departments of the 1989 Safety Contest.

The purpose of the annual safety contest is to create positive safety attitudes, prevent accidents, and involve employees in the safety and health process.

In recognition of their exemplary efforts, the employees from these departments and their families celebrated with a picnic held on their behalf at CRA Missile Park on Sunday, June 3, 1990.

Bernie Kulchin, division vice president of Human Resources, presented the department safety award to John Nelson, quality assurance chief of Failure Analysis, who in turn presented the award to engineers Dan Bergen, Bob Petersen, and Carl Wannamaker.

Bernie honored On-Board Producibility when he gave its director Jack Lambert the safety award.

Upon receiving the award, Jack Lambert indicated that Manufacturing Engineering will be a tough group to beat in 1990. "To date, the 200-employee organization has had no points assessed against them for safety violations, nor have we experienced any lost time accidents."

The safety award for Tool Manufacturing was given to Supervisor George Bishop.

Catch the Spirit!

Community Relations Fair Set for July 19

Employees from General Dynamics' San Diego divisions are invited to attend the Second Annual Community Relations Fair to be held on Thursday, July 19, from 11:00 a.m. to 1:00 p.m. at Missile Park.

The theme for this year's event is *Catch the Spirit*. The event is designed to give employees the opportunity to explore volunteer programs and talk with representatives from non-profit agencies in the San Diego area. More than 30 agencies have been invited to attend.

This is an excellent chance to become involved in community volunteer service.



WATCH THE AC-69 LAUNCH!

**On the day of the
launch, large
monitors will be
set up at Kearny
Mesa in the
Building 2
Presentation
Room.**

**Launch Window
Tuesday, July 17
12:41 p.m. - 12:54 p.m.
or**

1:56 p.m. - 2:09 p.m.

PACIFIC DAYLIGHT TIME

(NOTE: date & time subject to change)

LAUNCH HOTLINE!

The Atlas Program Office will provide the latest information regarding the AC-69 vehicle and launch status. For up-to-date information call:

Extension 38769

Paper Chase Continues on a Successful Note

By Joe Alcala

The Paper Chase, aimed at saving time, resources, and energy through the reduction of paper used throughout the division, has proven to be a successful effort in getting rid of pesky, unwanted, and unused reports that clog up work areas, mail systems, photocopy machines, and employees' time.

This has been due to the participation of many people throughout Space Systems who acted as representatives from each functional area.

Last year the division used 180 tons of paper and in fact, prior to the kickoff of Paper Chase, it was

estimated that we would use 225 tons in 1990!

In the interest of saving paper, it was decided not to use an extensive poster campaign. Instead, a cardboard replica of a paper stack and the Paper Chase bear created by Will Shelton of Graphic Services, was put up in most buildings in which status was periodically updated.

To date, Space Systems has been able to reduce its paper usage and raise the sensitivity of a sufficient number of people to make a difference. Unfortunately, we did not hear from all of you. However, based on only the responses received we were able to reduce paper consumption by approximately 14%.

Many of you responded by asking to be deleted from various distribution lists. That was the feedback we were looking for. However, some of you did not respond to our inquiry and we are assuming that you also want to be deleted from the distribution affecting you. Not returning the subscription form was one option with the condition that your name would be deleted. If this is not your choice, we ask that you re-establish your subscription for the affected document with the originator.

Regretfully, it was not always possible to reach everyone who was receiving unwanted reports, too many copies of documents, etc. If you were not contacted, or if you have any good ideas for the Paper Chase or how we can further reduce the volume of paper, you may call extension 77542.



The Paper Chase bear and one of his best friends, Charlotte Whorton, stand by the paper stack in the lobby of Kearny Mesa Building 2.

Inside Space . . .

The Engineering Information Exchange (EIE) is holding a seminar on the Delta vehicle at 11:30 a.m., July 24, in the CP4 MIC Room. This is the fourth in the **Sizing Up the Competition** series. It will be a joint presentation by **Mark Henley** and **Skip Lotker** . . . the **Ruse Performance Gallery** is presenting an anthology of six of San Diego's finest poets. One of them happens to be **Chris Vannoy** of Space Program Logistic Support. The reading takes place at 447 Fifth Avenue at 2:30 p.m. on July 29 . . . and we have seafarers too! Retiree **Bob Smalley** is entering the San Francisco to Hawaii **Pacific Cup Regatta** as captain of the good yacht *Allegro*. Among his stalwart crew is **Mo Rodriguez** of Structural Dynamics . . . **Eddie Leung** and **Scott Peck** received a patent awhile back for their invention titled **Hybrid Pulse Power Transformer**. It was worth a \$300 patent award to each of them . . . Cape Canaveral's manager of Human Resources **Jerry Williams**, along with **Bill Trudeau** and **Rita Jackson**, set up a basic coating inspection course through a well-planned coordination effort with the **National Association of Corrosion Engineers**.

Retirees

Thanks and good luck to these Space Systems employees who recently retired:

George Carpenter, Metallographer, Material & Processes, 10 years

Dorothy Childers, Material Analyst, Inventory Management, 2 years

Ed Johnson, Engineering Specialist, Manufacturing Engineering, 34 years

Jim Morgan, Engineering Specialist, Advanced Systems Development, 25 years

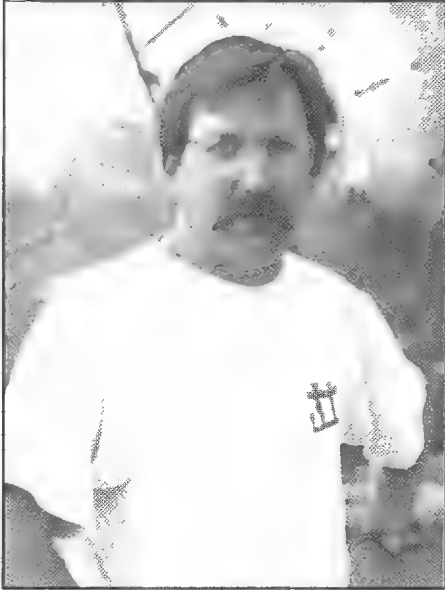
Jimmie Zak, Material Project Administrator, Material Project Control, 36 years

Space Systems Is an Equal Opportunity Employer

Featured Employee

Kevin Stafford Protects Schedules and Costs with Zero Defects

By Billy Eggert and Anne Wolff



Kevin Stafford is a Tank Fabricator at Plant 19. Kevin began his career with Space Systems Division in September, 1988, working on Item 180, the Centaur Aft Bulkhead. The Centaur Aft Bulkhead, common to both the Atlas and Titan programs, is one of the most labor intensive items at Plant 19.

Without a doubt, Kevin has become the expert at installing the complex thrust cylinder into the aft bulkhead. This is significant because this particular installation is one of the toughest assemblies in the shop, and performing it with zero defects protects our quality, schedule, and cost objectives.

Despite the difficulty of the installation, Kevin completed the aft bulkheads for A/C-70, T/C-11, T/C-12, and T/C-13 with Zero Defects. In addition to establishing this excellent quality record, Kevin significantly reduced the assembly time. Kevin's first aft bulkhead (for T/C-8) took 40 days. He recently completed T/C-13's aft bulkhead in a record 16 days!

Kevin's dedication to his task, and his continuous awareness of quality, schedule and cost requirements are exemplary. Contributions such as his give us the competitive edge we need to be the world class producer of launch vehicles!

Cost Analysis Group Saves Big in 1989

Now that all the figures are in, the Cost Analysis Group at Space Systems participated in savings of over \$32 million in 1989.

This group is headed up by Dan Little, chief-Procurement Administration and Legal Support, and consists of Frank Pospisil (group leader), Sharon Narang, Joe Niewiadomy, Dick Houghten, and Melanie de Sa.

They are a procurement function which provides various skills and techniques to assist in negotiations of realistic prices. They gather, assimilate, and evaluate proposal-related data furnished by suppliers.

The Cost Analysis Group reviews each cost element of material, labor, and indirect expense which makes up the supplier's proposal. When feasible, assistance is requested from government or division audit functions. The group also must rely on input from various technical functions to help evaluate supplier estimates that are not adequately supported or based on judgment or experience.

Last year, the Cost Analysis Group analyzed over 190 vendor quotations and proposals valued in excess of \$233 million to produce savings of over \$29 million. In addition, over \$40 million was settled in termination claims, saving an additional \$3.2 million.

Suppliers Become *Space Team* Members

Space Systems has a high assembly profile. For this reason, the division is extremely reliant on a vast supplier force to provide the needed critical components to assemble launch vehicles. There are more than 375 manufacturing companies around the world that provide 95% of the piece parts necessary to complete the Atlas and Centaur vehicles.

Larry Foss and Sue Kopp of Quality Assurance are involved in motivating the employees of these manufacturers to realize the importance of their product in the completion of a successful launch. They do this through a presentation entitled *Space Team*. The 35-minute program utilizes both viewgraphs and video tapes of actual launches.

Larry and Sue created this program which results in increased quality in the suppliers' work. This impacts positively on the cost of the launch vehicle.

"The suppliers' employees express a great deal of satisfaction and appreciation when becoming a member of the *Space Team*," Larry said. "We actually show them where their part interfaces with the launch vehicle and why it is necessary for that part to function properly 100% of the time."

Sue added, "You can really see their excitement when they understand the complete mission and know that they are partly responsible for its success."

To add emphasis to the presentation, Larry and Sue created an acronym out of *Space Team* — *Supplier Partnerships Achieving Continued Excellence Through Employee Awareness and Motivation*.

The program is also available for internal presentation, since division employees are also part of the *Space Team*. Call Larry Foss at 79076 or Sue Kopp 39007.

Sue Kopp and Larry Foss of Quality Assurance are shown planning the next trip to visit a supplier in order to enlist that company's employees as members of the Space Team.



Pilot PAT TQM Training Class Completed

A significant step in developing the format of future Process Action Team (PAT) Total Quality Management (TQM) training classes was achieved when 16 members of the Item 180 and Item 103 Manufacturing Pilot Teams completed a 4-day session on May 24 at Viewpoint Plaza. Led by consultant Susan Seidl and Space Systems' David Foxx, the teams were instructed in techniques to enhance group dynamics, team building skills, and problem solving abilities.

Participants were presented with certificates of completion by Ed Squires, division vice president of Production, who addressed the class by saying that this training gives a structure for working out problems and that he is eager to meet with PATs to refine the process of problem solving.

"This is a method of breaking down functional barriers by encouraging and supporting cross-functional efforts," Ed said. "We need to revise methods. This will make the division more effective and competitive in the marketplace." He went on to emphasize that TQM is not a static program, but a continuing process of improvement.

The class consisted of David Cates, Doug Dougherty, Billy Eggert, Becky Goffar, Elie Jerdak, Dave Mann, Dean Marshall, Van May, Bill McClurg, Len Neiman, Robert Olson, Daniel Rupert, Robert Vanevery, Brian Wilhelm, Jerry Yaddgo, and Brian Young.



Graduates of the Pilot PAT TQM training class gather for their photograph outside Viewpoint Plaza Building 2 upon completion of their instruction.

GDIN Is Now Tied in with AT&T

As of July 1, General Dynamics' Integrated Network (GDIN) began working under a three-year agreement with AT&T for companywide long-distance data, voice, and video services.

Concurrently, "on-net" (seven-digit) dialing to other General Dynamics locations has been discontinued. Eleven-digit dialing (9 + 1 + area code + number) will be used for all domestic long-distance calls, including those to other company locations. Internal five-digit dialing, local dialing, and international dialing will not change.

Linda Sharp has additional information you may need about this new service. She can be reached at extension 66766.

Matching Gifts Policy Clarified

Due to a large degree of confusion regarding matching gifts and various types of "thons," e.g., walkathons, Barbara Stuart of corporate headquarters has issued the following information:

Only an employee's personal donation of \$50 or more will be matched.

"The gift will not be matched unless there is a signed matching gifts application for each General Dynamics donor making a gift of \$50 or more," Barbara stated.

Pooled gifts such as a collection for any purpose will not be matched. All gifts must be individually made and a matching gifts application submitted by each donor.

Space Systems Supplier Selected for Corporate Scholarship Program

Bay City Marine, Inc., a local Small Disadvantaged Business (SDB), has been named as the recipient of the 1990 Corporate Scholarship Award. Mr. Austin Crawford, company vice president, will be representing Bay City at the week-long training scheduled for August 26 through 31.

Bay City Marine's selection was made after a thorough review of all candidates submitted by the various divisions of General Dynamics to a corporate selection team. This scholarship was established last year to provide a selected SDB the opportunity to receive the high-caliber management education that is readily available to large corporations. The Amos Tuck School of Business, founded at Dartmouth College, developed this specific program to strengthen the management and financial skills of minority entrepreneurs.



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Orbiteer

P.O. Box 85990, MZ 22-7000
San Diego, CA 92138

Patrick Andrews, Editor
(619) 573-9373

Rita Jackson, Reporter
CCAFS, (407) 730-5014

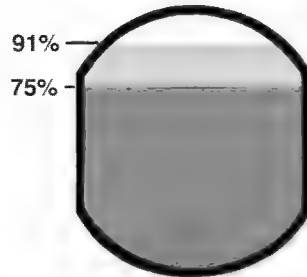
Lela Reddekopp, Reporter
VAFB, (805) 866-9556

Space Systems employment for the week ending June 30, 1990, was 4,779.

Titan/Centaur Separation Test Tank

ECD:* 6 Nov 90

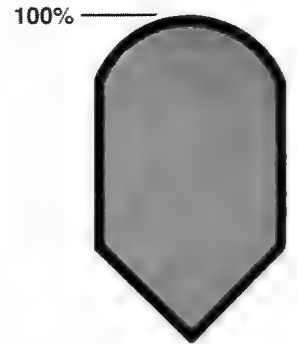
The tank is completing major weld. Plans to finish major weld and move the tank to the wash station for cleaning and drilling have been delayed so that final assembly and some strain gauge installation work originally set for Sycamore Canyon can be done at Plant 19. The tank goes to KM in late Oct for pressure testing. We are 16% off plan, or 11 days behind.



Atlas II Stub Tank

COMPLETED: 20 Aug 90

The Atlas stub tank was shipped from Plant 19 to the KM pressure pit on Aug 20. Pressure testing was completed and the tank shipped to the Sycamore Canyon test labs on Aug 29 in preparation for structural loads testing. This testing will occur through mid-Dec, 1990.



Titan/Centaur 8

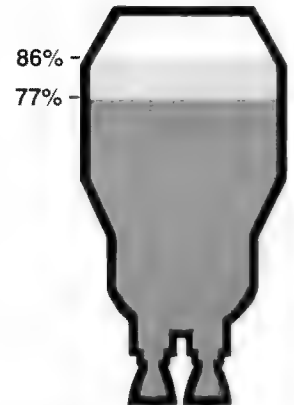
Acoustic testing was successfully completed in the KM Acoustic/Thermal Test Facility on Sep 15. Space vehicle adapter matchmate was completed ahead of plan, on Sep 22. The vehicle moved to the thermal chamber on Sep 26 for thermal testing and mission simulation. ECD is Nov 7 because of a pacing part shortage. We are 2% off plan, or 18 days behind.



Titan/Centaur 9

ECD: 22 Dec 90

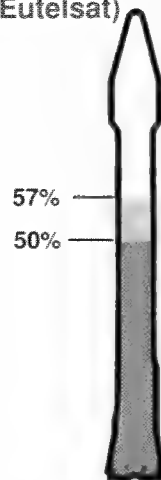
The vehicle has progressed from final assembly to systems integration, which began Sep 20, with power-on occurring on Sep 23. TC-9 is now undergoing electrical acceptance testing. ECD has been changed to Dec 22 because of a five-day impact to the start of checkout. We are 9% off plan, or 15 days behind.



Atlas/Centaur 101 (payload: Eutelsat)

Launch Date: Feb 91

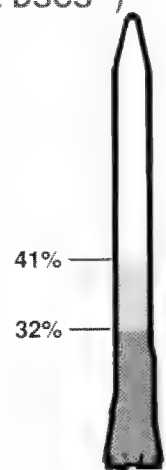
The Centaur tank moved from Plant 19 weld/wash to a successful pressure test. It is now in the new KM Fixed Foam Building. Centaur's final assembly and checkout will continue during fixed foam installation. Atlas tank assembly at VAFB is progressing. The tank was successfully trial-mated to the vehicle's booster thrust structure.



Atlas/Centaur 102 (payload: DSCS**)

Launch Date: May 91

The Atlas tank at Plant 19 was delayed due to a material mismatch on the aft bulkhead. The bulkhead will be completed on Oct 5. Completion of Centaur tank major weld at Plant 19 is planned for Oct 17. Shipment of the completed tank to KM for pressure testing is planned for Oct 25.





October 5, 1990

International Launch Contracts Signed in Europe

General Dynamics Commercial Launch Services (CLS) signed launch contracts with Agenzia Spaciale Italiana (ASI), the Italian Space Agency, and General Electric Technical Services Company, Inc. (GETSCO).

The contract with ASI is to provide Atlas launch services for the X-Ray Astronomy Satellite (SAX) in 1994.

The event took place in Rome, Italy August 31, when Alan M. Lovelace, president of General Dynamics CLS and general manager of Space Systems Division; Luciano Guerriero, president of ASI; and Carlo Bongiorno, director of ASI, took part in the signing ceremony.



Professor Luciano Guerriero, president of the Italian Space Agency, on the left, is shown with Dr. Alan Lovelace as the two sign the contract to provide Atlas launch services for the X-Ray Astronomy Satellite (SAX).

"We are pleased to establish this relationship with the Italian Space Agency and proud that our Atlas launch vehicle will play a key role in boosting this important scientific satellite for the Italian government," Lovelace said.

An Atlas I launch vehicle will launch the 2,868-pound satellite from Launch Complex 36B at Cape Canaveral.

The X-ray Astronomy Satellite is a major scientific program of the Italian Space Agency and the Netherlands Agency for Space Programs. The satellite, which will be manufactured by Aeritalia, will study x-ray emissions. The satellite will perform between 2,000 and 3,000 separate observations during its lifetime.

Contract deals continued in Farnborough, England, when an agreement with GETSCO, a wholly owned affiliate of General Electric's Astro-Space Division, was signed on September 5. This is to launch the BS-3H satellite next April from CCAFS.

The ceremony was conducted with Alan Lovelace and L. Ron Greenwood, vice president and general manager of General Electric Astro-Space Division, as signatories.

An Atlas I is scheduled to launch the 2,940-pound direct broadcast satellite. It will beam television signals to small satellite receivers in Japan.

GE Astro-Space Division in East Windsor, N.J., will build the BS-3H satellite. GETSCO was selected by the Japan Broadcasting Corporation to provide the satellite and launch service.

The Space Systems Family Makes It Happen!

Fun, Refreshments, Games, and Gifts to Mark Family Recognition Day

If you like a carnival atmosphere complete with food, games, and plenty of entertainment, then mark Sunday, November 4, 1990 on your calendar.

That is when Family Recognition Day will be held by Space Systems at the CRA Missile Park. All of us — spouses, children, and fellow team members — are going to take the entire day to celebrate our achievements and pride as the Space Systems Family.

Using the theme *The Space Systems Family Makes It Happen*, the event will be a combination fiesta and picnic filled with games, prizes, refreshments, free souvenirs, and music.

The kids will be thrilled with the Creepy Crawly Critter Show, the young child's craft tent, magic show, caricaturists, palm reader, colorful helium balloons, clowns, face painting, ventriloquist, the Punch 'n' Judy show, and much much more.

Plan on joining the rest of the Space Systems family when the park opens at 10:00 a.m. After all, it's *our* day.

Invention Built from Scrap Materials!

Mark Stricek Suggestion Nets Big Savings

By Rita Jackson, CCAFS

Mark Stricek, a senior launch service technician, was recently awarded the largest employee suggestion check to date at CCAFS. Mark's suggestion, titled *Fabrication of a Twisted and Wrapped Cable*, netted a savings of \$203,981.12.

How does an employee come up with such an award winning idea? For Mark it was frustration with the process being used when he was assigned to the cable wrapping team. The cables are twisted to provide flexibility so the entire bundle can be manipulated when it is put in place. It took 14 people 48 working hours to do a single cable. The long sections of wiring were laid out on a long cable tray. The cable strands were fed through holes in a series of blocks before they were twisted and wrapped into a single unit. The old process required a person to be stationed along the cable tray at each block to turn it and twist the cable. This process worked for cables that were 40-feet long, but the cables Mark was assigned to help with were 200 feet long. The frustration came from the many stops and starts in the work flow as



Left to right: Chuck Hayes, launch operations supervisor; Mark Stricek, \$10,000 award winner; Pat Whisenant from Employee Suggestions; and Frank Watkins, base director of CCAFS.

each person in the line turned a single block.

Mark thought about the process and came up with an idea that would allow the cable to be rolled up on a spindle as it was wrapped and would allow the cables to be twisted from one end instead of at each section. He took his idea to engineering and supervision and with the help of carpenter Herb Vitt and welder Randy Reynolds, he was able to build his invention from scrap materials.

Technicians are now able to make each cable with only four people and they can do it in 40 working hours. Base director Frank Watkins commended Mark during the check award ceremony on his contribution to cutting costs.

Professional Advancement Classes Among Activities

NMA Membership Now Open to All Employees

By Sue Kopp

The Space Systems Chapter of the National Management Association has opened its membership to *all* employees of the division.

The National Management Association is a nonprofit organization dedicated to the advancement of management as a profession and the support of our American free enterprise system. The association sponsors monthly general membership meetings, personal and professional advancement classes, and a variety of professional and community related activities.

Any employee interested in joining the association should contact their nearest NMA booster or call Lisa Davis, NMA director of Member Relations, at extension 39066.

Inside Space . . .

Host family needed for a 22-year-old Japanese woman for a one-month homestay. She is sponsored by a nonprofit organization. For information call Shelly Deibert at 49032 . . . Space Systems Division passed the annual U.S. Air Force Safety Inspection held on August 7 and 8 at Vandenberg AFB . . .

CRA would like to remind everyone that there is a No Pets Allowed rule in effect in Missile Park. Your cooperation will be appreciated . . . the Travel Center has new reservation hours. They are now 7:00 a.m. to 5:00 p.m. Monday through Friday . . . talk about planning ahead! Cindy McCarthy and Pam Mell are already hard at work on the NMA Holiday Dinner & Dance. They have the Sheraton Harbor East Grand Ballroom all set for the event on December 7. Ticket sales are in November. It is being hosted by Tom Baranouskas, division vice president and controller of finance .

. . . Systems Analysis will be holding their fifth annual picnic at CRA Missile Park on October 6.

The committee is working with Alda Jorgenson, Community Relations, on potential recipients of donated food, clothing, and books . . . do you have a fear of speaking in front of groups of people? To help overcome this phobia, we recommend the GDSS Chapter of Mutual Fun

Toastmasters. These friendly folks meet Tuesdays at 5 p.m. in the Atlas MIC Room on the second floor of CP4. Call Joe O'Loughlin at 77167 for more details . . . the students at the Pierre-Brosseau Secondary School in Quebec sent Marty Winkler a letter of thanks for copies of *The Emigrant Trail* shipped to them . . . watch for Women's Opportunity Week coming up October 15 through 19. More information will be available on flyers sent out through Division Distribution.

Titan/Centaur Program Progress Continues

*Our Titan/Centaur Program is building to a crescendo—that is, there are a lot of very critical and exciting near-term milestones. As each of us work our individual tasks, it is essential that we place mission success (product and support quality) as the priority requirement. The missions we will soon be delivering to space involve very, very expensive (approximately \$1B each) and difficult-to-replace spacecraft. Our ultimate requirement is to execute a successful delivery of the space vehicle on orbit. Schedules are important, but are meaningless if the ultimate flight fails. **Quality is number one — success depends on each of us!***

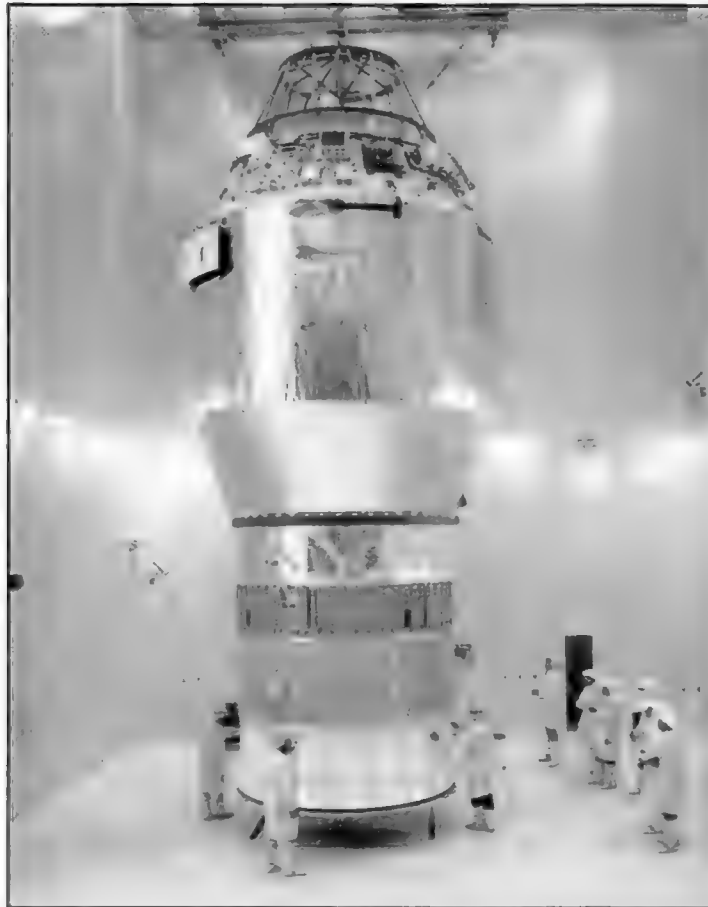
— Russ Thomas
Vice President & Program
Director, Titan/Centaur

TC-8 is in the Thermal Acoustic Test Facility (TATF) thermal test chamber. High pressure helium systems tests, acoustic environment tests, and space vehicle adapter matchmate have been completed. An outstanding job by Titan/Centaur team members was done in manufacturing and replacing the Inertial Reference Unit (IRU) mount; the original mount proved to be undersized. Test instrumentation and vehicle systems have been hooked up and checked out in preparation for the recently increased Titan IV acoustics level tests. These increased test level acoustics resulted from recent Titan IV flight data. All three test runs have been completed and data is currently being evaluated.

TC-9 has virtually completed final assembly and factory checkout started with first power on September 23.

TC-10 completed Plant 19 activities, was shipped to Kearny Mesa where it completed pressure pit testing the first week of September, and is currently in final assembly. With the receipt of TC-10's forward adapter from Harlingen, Texas on August 22, the list of major items needed from outside suppliers to support final assembly is complete.

TC-11 completed major weld operations and is currently in wash station for cleaning and installation of



The first flight vehicle (TC-8) being positioned in the Acoustic Test.

tank internal hardware. The separation system blast shield was welded in place defect-free.

TC-12 is currently being worked in the major weld station. The first three hydrogen tank skins were welded in place defect free.

The Titan/Centaur separation test tank is nearing completion at major weld activities.

The Titan IV/Centaur structural test vehicle was successfully tanked at the Sycamore test site, with cryogenics during the week of August 12. This test was the first of nine planned cryo tankings comprising the Structural Test Program. The primary objective of this test was to demonstrate the various aspects of the efficiency and performance of the tank insulation system. The vehicle was at cryo temperatures for more than 26 hours, being the longest continuously

"cold" Centaur in the long history of the Centaur programs.

Engineering releases and procurement documents are being prepared for obtaining the hardware to activate Launch Complex 40 at Cape Canaveral Air Force Station. This launch complex is in the process of being revamped to the Titan IV configuration, including Centaur. Major test and launch control will be from the same Launch Control Center as LC-41. This second complex at CCAFS, planned to be operational in 1992, will provide for a more rapid launch rate resulting in the potential for follow-on Centaur business.

The Inertial Navigation Unit (INU) qualification unit has completed fabrication and has begun acceptance testing prior to the start of formal qualification testing. A major milestone was reached when performance semiconductor delivered the first production process chips to Honeywell in the silicon-on-sapphire configuration.

Integration of the INU continues with successful testing in the Titan/Centaur

Systems Integration Laboratory exercising the communications links between the INU and other vehicle avionic units. Alignment and navigation data on a correctly calibrated INU is indicating excellent correlation to specifications in the guidance and navigation laboratory.

The first Block II Data Acquisition Systems (DAS) were delivered by Gulton for installation on TC-12/TC-13. Gulton expects to complete all deliveries for the 10 shipset buy at year's end.

Harlingen delivered the TC-10 forward adapter, the aft adapter for the full-scale separation test, and TC-11. The TC-12 aft adapter is complete and ready for shipment to San Diego.

This article was prepared from information furnished by Tony Christensen and Dr. Robert Risley.

Improve quality. increase productivity. reduce cost

Statistical Process Control Implemented at Plant 19

The use of Statistical Process Control (SPC) has been implemented at Plant 19. The objectives are to improve product quality while at the same time increase shop productivity and reduce costs. These objectives are a contradiction of the commonly held belief that to build a better vehicle, it will take longer and cost more. Control of tank skins manufacturing through the use of statistical tools is one answer to the quality-cost-schedule opportunity.

"X Bar" (average) and "R" (range) charts are currently being managed in the first cut area by an SPC team comprised of mechanics Dave Hernandez and Tim Mustalo, Department 759 operations supervisor Jim Clark, manufacturing engineer Ron Bales and quality engineer Leonard Neiman. The "X-Bar" chart represents the averages of various skin widths after trimming while the "R" chart represents the range of those widths. In this way, both the center and the variation



Pictured above is the Statistical Process Control Team made up of (left to right): Ron Bales, Leonard Neiman, Jim Clark, Tim Mustalo, and Dave Hernandez.

of the process are made visible, allowing the operators to make changes "real-time."

As tank skins are cut, data is recorded and plotted on a line which becomes the indicator of what the process is doing. When first begun, data suggested that the process was out of "statistical control." The skins were acceptable per the

engineering requirements, but the amount of change in width from one skin to another was so great that extra inspection and shop effort was required both at next assembly and major weld to ensure a "Blue-Print" vehicle. At present, the process has improved and there are plans in work to establish statistical controls which allow operators to make real-time adjustments.

Benefits of SPC include improved product quality, savings in both inspection and shop time, increased uniformity, and the prevention of scrap. Control charting also

gives a pictorial commentary on the performance of the process and aids in production management.

The cross-functional SPC team at Plant 19's first cut area is an example of the TQM philosophy in action. Through teamwork and the application of statistical tools, continuous process improvement is made possible.

Space Division Holds First Business Management Institute

By Ken Gowen, Manager, Organizational Effectiveness

Twenty-nine employees participated in the first Space Systems Business Management Institute (BMI) held August 27 through 29 at Rancho Bernardo Inn.

In light of current economic forces, the program was designed to assist division leaders in dealing with changing business conditions. Participants interacted with various corporate and division staff over various critical business issues.

Ray Kozen, corporate vice president, Special Projects, and David Wheaton, corporate vice president, Business Development & Planning, presented frank, open discussions on *The Changing Defense Environment* and *GD Business Development*. This provided participants with a clear picture of companywide challenges, laying the groundwork for the division-unique issues presented by functional division staff.

The program's focus on business issues helped participants to realize the criticality of approaching their jobs as "business managers."

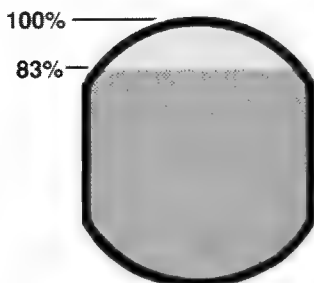


Participants in the Business Management Institute were: (front row) Marcella Martin, Vic Martiny, Janet Goforth, David Roldness, Jeff Patton, Wendy Mihalic, Jim Muir, David Patterson; (second row) Roger Burritt, Jim Ramsey, David Martz, Alice Klein, Ron Huffman, Jim Spornick, Richard Webb; (third row) Jerry Jamison, Mike McDonald, Kevin Jensen, Bud Jennings, Mitch Oliver, Steve Babb, Peter Munoz, Dan Wiley; (fourth row) Ed Christiansen, Chris Getner, Todd Booth, Kurt Nelson, Peter Morris, Perry Rasmussen.

Titan/Centaur Separation Test Tank

ECD:* 6 Nov 90

The tank has completed major weld at Plant 19 and began wash station installations on Oct 22. It will move to Kearny Mesa for pressure pit testing on Nov 8. We are 23% off plan, or 15 days behind.



Atlas II Stub Tank

COMPLETED: 20 Aug 90

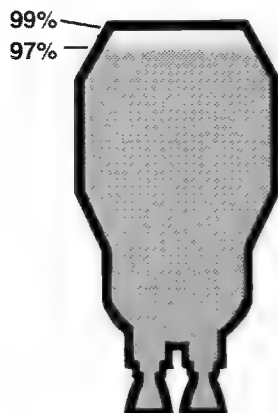
The Atlas stub tank was shipped from Plant 19 to the KM pressure pit on Aug 20. Pressure testing was completed and the tank shipped to the Sycamore Canyon test labs on Aug 29 in preparation for structural loads testing. This testing will occur through mid-Dec, 1990.



Titan/Centaur 8

ECD: 7 Nov 90

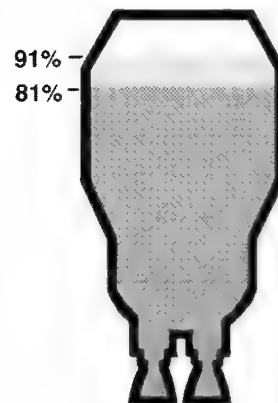
T/C 8 completed thermal and acoustic testing on Oct 19. The vehicle began hardware acceptance review and mission simulation on Oct 22, which will be complete by Oct 29. T/C 8 will then proceed through final preparations before delivery. We are two days behind our planned delivery.



Titan/Centaur 9

ECD: 22 Dec 90

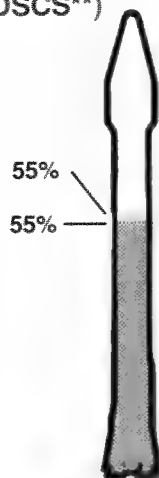
T/C 9 is continuing through Station One of systems integration. It will be held in the docks until T/C 8 leaves the annex. T/C 9 will then move to the annex to complete systems integration. We are 14 days behind our planned delivery.



Atlas/Centaur 101 (payload: DSCS**)

Launch Date: May 91

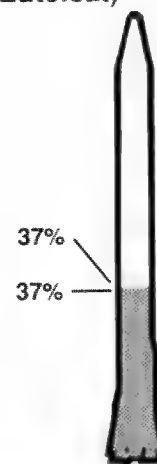
Centaur tank fixed foam installation complete. Curing and inspection continue; tank delivery to the KM clean room is Oct 28. Atlas final assembly at VAFB is continuing. Scheduled date of delivery to CCAFS for both vehicles is January 1991. GDSC-Harlingen assembly of the payload fairing, split barrel, and interstage adapter are in work, with delivery planned for December.



Atlas/Centaur 102 (payload: Eutelsat)

Launch Date: July 91

Atlas tank major weld completed on Oct 17. After completing wash station operations (planned for Oct 30), the tank moves to KM's pressure pit and then to VAFB for final assembly. Skin axis location difficulties and a bulkhead mismatch have forced the delay of completing the Centaur tank until Nov 16. GDSC-Harlingen continues toward a Nov ECD for the Atlas thrust structure.



ORBITER

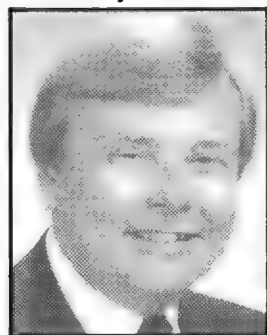
GENERAL DYNAMICS SPACE SYSTEMS DIVISION

November 2, 1990

Riley Named New Vice President of Business Development

Carey J. Riley has been named division vice president of business development for Space Systems Division.

Carey transferred here from the General Dynamics Washington office where he had been corporate director of cruise missile and strategic missile systems since 1987. He began his career with the company in



1977 as an engineer at Convair. In 1981 he was promoted to program development manager for Tomahawk cruise missiles and was named corporate manager for cruise missile systems at the Washington office. From 1970 to 1977 he was a pilot in the commercial aviation industry.

Carey received a bachelor of science degree in aerospace engineering from Arizona State University in 1971, and a master of science degree in industrial engineering in 1975 from the same university.

He is on the board of directors of the Cruise Missile Association and is a member of the American Institute of Aeronautics and Astronautics, the National Security Industrial Association, the Society of Automotive Engineers, and the Airline Pilots Association. He and his wife Mary Lou and new son Michael Carey, are relocating to San Diego from Arlington, Virginia. We are happy to welcome Carey and his family aboard.

Supercollider Contract Is Awarded To Space Systems

Space Systems Division has been selected as the Leader for the

volume manufacture of the magnets. We will produce a series of 301

"We have been working for 5 years for this most significant win. Our Energy Programs team did an outstanding job in preparing us for this exciting opportunity."

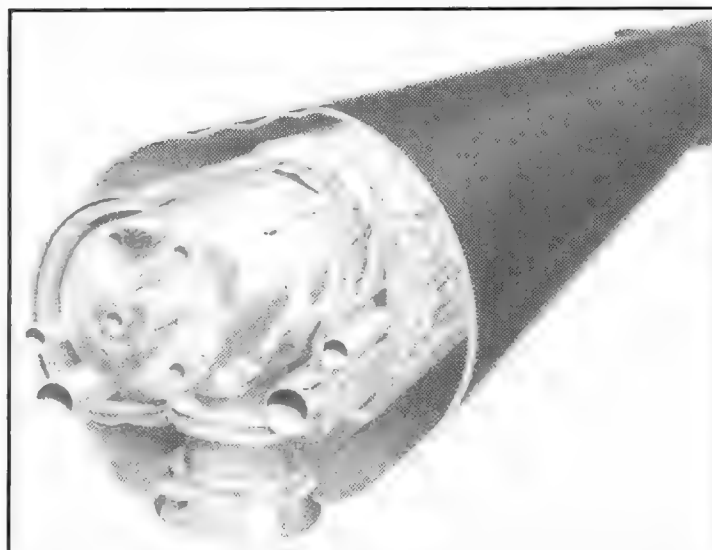
— Bob Johnson, Manager of Energy Programs

Superconducting Super Collider Laboratory's (SSCL) Collider Dipole Magnet (CDM) program. Westinghouse Electric Corporation will act as the Follower.

The GDSS Energy Programs group has been readying for this program for over 5 years, since former president Ronald Reagan first announced the SSC as a national initiative.

The firms will enter into negotiations for a contract valued at approximately \$200 million for completing the design and beginning high-volume manufacture of superconducting magnets for the Superconducting Super Collider particle accelerator. Under the contract GDSS, will develop the capability for

preproduction magnets, 251 of which will be installed into the accelerator. Another aspect of the program involves building 8 demonstration magnets at the Fermi National Accelerator Laboratory (FNAL). This effort will involve GDSS personnel who will relocate to FNAL for an 18-month period. The 8 demonstration magnets will be tested in September of 1992 as proof-of-principal for the design.



Artist rendering of the SSC Collider Dipole Magnet (CDM). A typical CDM measures approximately 52 feet in length and weighs about 12.5 U.S. tons.

"Reliable, accurate . . ."

ARC Personnel Insert Progress Charts as Part of Work for General Dynamics

The Association for Retarded Citizens (ARC) has added a new project to those it is already performing for General Dynamics divisions in San Diego. Members of the association have now taken on the task of inserting the space vehicle progress reports into Space Systems Division's *Orbiter*.

This latest work assignment came about when the newsletter began being printed on recycled paper by Ecology Printing in El Cajon. Alan Manchester, the owner of the firm, has used ARC's personnel and facilities for many projects. "They are reliable, accurate, and competitively priced," Alan said in praising both the association and its workers.

All four San Diego divisions of General Dynamics have made contributions to ARC. That includes the employee Con-Trib club as well. In speaking of these donations, Dr. Alan Lovelace, corporate vice president and general manager of Space Systems said, "It's an investment, not a contribution, because doing business with ARC makes good business sense." Dr. Lovelace went on to say, "We recognize that it is important for all citizens of our community to put their talents to work. ARC has given all people the dignity of work."

ARC is a nonprofit organization dedicated to establishing and developing programs for mentally and physically disabled persons. It provides these people with care, training, and employment. ARC has earned certification by the National Commission of Accreditation of Rehabilitation Facilities.

Other work that the folks at ARC do for General Dynamics includes building MILSPEC shipping crates out of plywood, drill sharpening, cleaning and sorting bucking bars, and processing floor sweepings. The latter operation consists of retrieving nuts, bolts, screws, washers, and other fasteners while sorting out metal waste for reclamation.

Mike Wasyliw, workshop manager, states that ARC's 225 employees are also involved in printing, woodworking, all types of packaging, and electronic assembly among other types of work.

We are pleased that the *Orbiter* has become part of ARC's activities.



While Mike Wasyliw, workshop manager, watches, some of the nice folks at ARC go about the task of inserting space vehicle progress reports into the *Orbiter*.

Inside Space . . .

Space Systems recently received a \$275 million follow-on contract from Martin Marietta Space Launch Systems Company for five additional Titan/Centaur Upper Stages . . . **Richard Bailey, Hugh Arrendale, Penney Michels, and Long Nguyen** of the Energy Systems Group, have applied for a patent on their invention entitled *Method and Apparatus for Switching Off Large Solenoids Used in Electromagnetic Launchers . . .* **Marine Corps Recruit Depot** is collecting personal comfort items for the troops serving in the Middle-East. These must be new, unused products in original packaging. Such items as toothbrushes, feminine hygiene products, sunscreen, chapstick, soap, paper, pens, pre-sweetened drink mixes, etc. can be dropped off in designated boxes at Gates 1 and 7 at Kearny Mesa or Gates 2 and 11 at Lindbergh Field. For more information call **Sue Hazlett** at 27841.

Retirees

Thanks and good luck to these Space Systems employees who recently retired:

Fred Blosshies, Project Engineer, Senior, Titan/Centaur Program Office, 36 years

Jerry Garrett, QA Specialist, QA Systems Engineering, 33 years

Garold Leonard, Launch Service Mechanic, Senior, CCAFS Site Support, 23 years

Al Orillion, Engineering Specialist, Senior, Huntsville Office, 2 years

Denis Powell, Program Manager, Advance Launch System Program Office, 30 years

Carroll Whitaker, Launch Service Technician, Senior, CCAFS Site Support, 23 years

Profit Center 92 Presents a Myriad of Challenges

By Carol Aguilar, Manufacturing Engineering

"Profit Center 92," Precision Weld Subassembly, located at the northeast end of Building 3 in Air Force Plant 19, presents a variety of difficult challenges every day. Formerly known as "Cost Center 92," the new name was coined by Mike Iverson, the production director, to foster a positive business image.

Profit Center 92 comprises subassembly areas for fluids lines, brackets, ducts, manifolds, and bellows for Atlas I, Atlas II and Titan/Centaur. Forecasting tooling requirements for Atlas IIAS has begun as well. These subassemblies in critical areas of the bulkheads, skins, and major weld are used at all five geographic locations — Plant 19, Kearny Mesa, Vandenberg, Cape Canaveral, and Harlingen, Texas.

Pierre Chammas, manufacturing engineer from Space Manufacturing Engineering, is assigned to oversee these daily activities. Pierre came to Space Systems in 1988. He entered the Manufacturing Engineering department and worked alongside Robert Bruce, a 50-year veteran of General Dynamics, in an intense on-the-job training program. Despite the long hours, Pierre managed to return to San Diego State University to complete all course work necessary for a Masters of Science degree in Mechanical Design.

There are currently nine manufacturing engineers and six tool designers working to support Profit Center 92 from the Manufacturing Engineering organization. One of the main challenges facing these employees is resolution to welding problems resulting from using a variety of metals, such as inconel, aluminum, and stainless steel. Other challenges involve

the intricate design of many ducts, such as the well-known "Olive Oyl." Many of these subassemblies are categorized as hard-to-make parts because of the angles, bends, welds, and inspection difficulties that these configurations present. Also included in Profit Center 92 is a new clean room where aluminum welding of various series and different types of sensitive metals is performed. The welded parts are also subjected to pressure tests to verify there is no leakage or hydrostatic discharge.

During 1989, a team of dedicated management and technical personnel known as the Senior Management Action Review Team (SMART) headed by Jack Lambert, director of Manufacturing Engineering, was formed to identify, refurb, and proof large major tooling at Plant 19. A similar initiative is now being performed on smaller tools by a group lead by Pierre. The Manufacturing Engineering team is coordinating efforts by Planning, Tooling, and Engineering to conduct a comprehensive review of all Profit Center 92 tooling to ensure their accuracy and usability by a new work force. This includes a pictorial Set-Up Sheet (SUSH) for hard-to-build parts that will show a step-by-step process for assembling the kits.

The Plant 19 Profit Center 92 experience provides young employees a wide range of involvement from engineering design to hands-on production to the final inspection buy-off. Space Systems is fortunate to have the caliber of employee found in Pierre Chammas and all those teammates who support this division in meeting its challenges.

AI Gould Honored by DPRO Employee Recognition Award

AI Gould of Quality Verification, shown in the photo between Colonel E.C. Gassman, USAF, commander of the Defense Plant Representative Office (DPRO), and Don Moore, vice president of Quality Assurance, received a quarterly award in the DPRO Employee Recognition Program. The certificate was presented to AI by Colonel Gassman in a special award ceremony.

AI received this honor for his superior work qualities. He is known to co-workers as a team player, is helpful and knowledgeable on the job, offers professional assistance to both customer and division personnel, and has proven over the years that he is able to meet common objectives in an excellent manner.

This Employee Recognition Program is a DPRO initiative which they established to recognize their own and local General Dynamics employees on a quarterly basis. The program focuses on process

improvement and teamwork as criteria for the award. It recognizes those people who contribute to the acquisition process through integrity and cooperation. Those who receive recognition are selected through a nomination and election process using secret ballots by DPRO personnel. As an adjunct to this award, AI was also given a Pacesetter Award by Space Systems Division.



Titan/Centaur Program Progress Continues

*Thanks for all the effort applied to get the TC-8 vehicle ready for delivery to the launch site. We are truly closing in on this very important milestone! A future issue of the Orbiteer will tell you of the planned rollout event at which all of our San Diego employees can participate. The second vehicle, TC-9, is not far behind! Our success with this program is fully dependent on each of us doing an efficient, **quality** job. Thanks and congratulations to you all!*

— Russ Thomas
Vice President & Program Director,
Titan/Centaur

TC-8 has completed thermal testing and mission simulation testing. It is now proceeding through the final hardware acceptance review and Interim Certificate of Completion processes in preparation for a mid-November 1990 delivery to Cape Canaveral Air Force Station.

Systems integration testing has been completed for TC-9 in Building 5 at Kearny Mesa. As soon as TC-8 clears the thermal acoustic test facility annex, TC-9 will move in for preparation for acoustic testing. The vehicle will be subjected to the same increased Titan acoustic test levels to which TC-8 was subjected.

Final assembly for TC-10 is nearing completion at Kearny Mesa. System integration testing is due to start in mid-November.

TC-11 has started final assembly operations, and this activity will continue

right up to the Christmas holidays.

Major weld operations are proceeding in parallel for TC-12 and TC-13 at Plant 19. Both are planned to be ready for final assembly activities in January 1991.

On October 9, 1990, the Structural Test Vehicle was tanked with cryogenics in preparation for the first structural loading test. Just prior to starting the load test, a leak indication was noted by the presence of what was surmised to be liquid nitrogen in the area of the C-1 engine gimbal pad. The test was aborted and an investigative plan was formulated to pinpoint the problem.

A special tanking of the liquid oxygen tank only was performed on October 12. With additional television cameras monitoring the bulkhead area, the leak was confirmed at the gimbal pad and presumed to be from one or more of the mounting penetrations through the tank wall. The leak appears manageable for continuation of testing based on the quantity of leakage and tank pressure control. Limit loading tests have been initiated with the leak condition. A plan for the repair of the leak is in work. The structural test program will continue until April 1992.

Sycamore Site "D" is in position to receive the stub tank for the all-up separation test. Installation of the instrumentation system and collecting bolt-on kits tasks are continuing.

Final manufacturing tasks continue on the stub tank at Plant 19 where the blast

shield installation is completed. The tank is now scheduled for delivery to Sycamore early this month.

Purchase orders are in work for the ground systems hardware required to integrate Centaur into LC-40. It is anticipated vendors will be on contract for all the long-lead items by early December. Engineering data packages are being prepared for a November 20 preliminary design review.

Gulton has delivered the TC-14 data acquisition system and is on schedule to deliver the remaining three shipsets before the end of the year. The Fort Worth Division has shipped two complete sets of separation system hardware in support of the full-scale separation testing.

TQM joint projects between Space Systems and major subcontractors Gulton, Pratt & Whitney, and Honeywell are proving to be very successful. Significant improvements in the buy-off process have been realized at Gulton and Pratt & Whitney. The Honeywell process action team (PAT) is working on having improvements in place to support the first INU delivery. The optimization of the flight certification process is the subject of a Space Systems PAT. This affects all suppliers which furnish hardware with a history jacket requirement to the division.

This article was prepared from information furnished by Steve Babb, Tony Christensen, and Rich Velazquez.

The Space Systems Family Makes It Happen!

Fun, Refreshments, Games, and Gifts on Family Recognition Day — and It's All Free for Everyone!

That's right, it is indeed **free**! So if a carnival atmosphere complete with food, games, and plenty of entertainment absolutely without cost appeals to you, come out this Sunday to **Family Recognition Day**. This event will be held by Space Systems at the CRA Missile Park without admission charges or costs for refreshments and the activities on the program.

Using the theme *The Space Systems Family Makes It Happen*, the celebration will be a combination fiesta and picnic filled with games, prizes, refreshments, souvenirs, and music.

The kids will be thrilled with the Creepy Crawly Critter Show, the young child's craft tent, magic show, caricaturists, palm reader, colorful helium balloons, clowns, face painting, ventriloquist, the Punch 'n' Judy show, and much, much more.

Join the rest of the Space Systems family when the park opens at 10:00 a.m. After all, it's *our* day — and the price is right!



Space Vehicle Progress Report

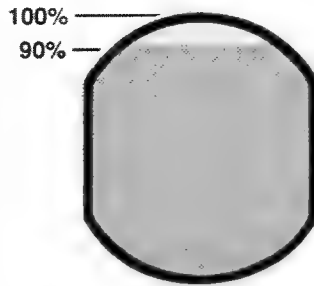
November 7, 1990

Space Systems Division — Building Highly Reliable, Quality Products

Titan/Centaur Separation Test Tank

ECD:* 13 Nov 90

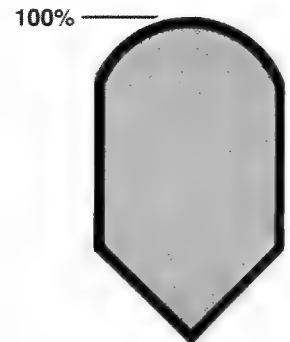
The tank has completed wash station and drilling for bolt-on installations. It is to be moved to the pressure pit on Nov 10. After completion there, the tank will move to Sycamore Canyon for final assembly and separation testing. We are seven days off plan to the Nov 6 commitment and on plan to the Nov 13 ECD.



Atlas II Stub Tank

COMPLETED: 20 Aug 90

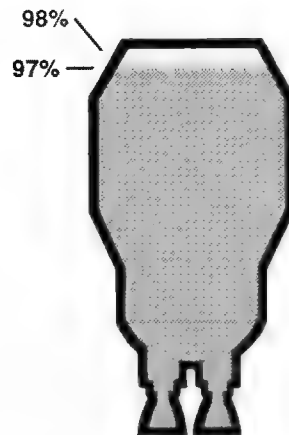
The Atlas stub tank is at Sycamore Canyon undergoing stiffness testing. Upon completion, it will then receive structural limit and ultimate load testing, forecast to be complete by mid-Dec.



Titan/Centaur 8

ECD: 7 Nov 90

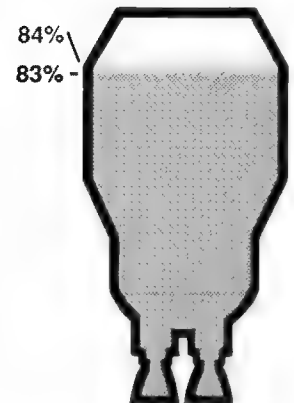
T/C 8 completed thermal and acoustic testing on Oct 19. The vehicle began hardware acceptance review and mission simulation on Oct 22, which will be complete by Oct 29. T/C 8 will then proceed through final preparations before delivery. We are two days behind our planned delivery.



Titan/Centaur 9

ECD: 22 Dec 90

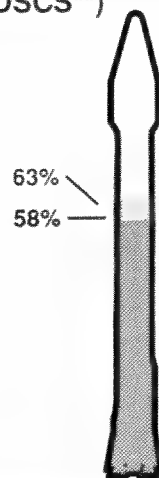
T/C 9 is continuing through Station One of systems integration. It will be held in the docks until T/C 8 leaves the annex. T/C 9 will then move to the annex to complete systems integration. We are 14 days behind our planned delivery.



Atlas/Centaur 101 (payload: DSCS**)

Launch Date: May 91

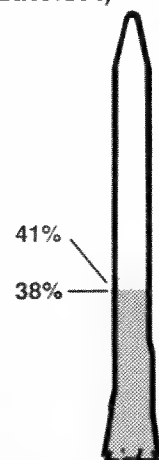
The Centaur moved from fixed foam installation to the KM clean room for final assembly Oct 29. Atlas final assembly and checkout are progressing at VAFB, with thrust section and tank final mate planned for mid-Dec. Both vehicles will be delivered to CCAFS in Jan 1991. GDSC-Harlingen continues work on the interstage adapter, payload fairing, and split barrel.



Atlas/Centaur 102 (payload: Eutelsat)

Launch Date: July 91

Atlas tank major weld completed on Oct 17. After completing wash station operations (planned for Oct 30), the tank moves to KM's pressure pit and then to VAFB for final assembly. Skin axis location difficulties and a bulkhead mismatch have forced the delay of completing the Centaur tank until Nov 16. GDSC-Harlingen continues toward a Nov ECD for the Atlas thrust structure.





November 16, 1990

500 Work Days Without a Lost Time Accident Is Celebrated with Hot Pizza and Warm Kudos

Material and Processes Engineering celebrated 500 work days without a single lost time accident on October 9 with a pizza lunch hosted by the Safety and Health Department.

Space Systems' Safety and Health manager Bill DeGarmo stated, "I want to recognize this outstanding accomplishment and offer my personal congratulations. Aside from avoiding the unpleasantness and pain of injuries, these employees saved the division untold dollars through their conscientious efforts in keeping their workplace a safe and hazard-free area. The average lost-time accident costs approximately \$5,000."

Lost time accident signs are posted in conspicuous locations in each

department, and updated on a daily basis. This is a part of an employee safety awareness program to bring everyone into the safety and health process.

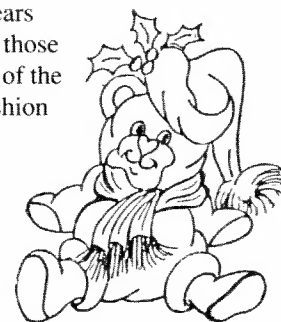
When a department approaches 100 days without a lost time accident, the Safety and Health Department schedules a ceremony for the employees. Special recognition is also accorded departments at 500 and 1,000 day safety milestones.

Failure Analysis, Tool Manufacturing, Product Line Management, and T&D Planning have also reached 500 days without a lost time accident and likewise are to be congratulated. Separate pizza luncheons will be planned to help each of these departments celebrate its fine record.

Angel Tree Project To Assure Happy Holidays For Abused Children

Those folks running around the San Diego General Dynamics' facilities wearing small bears

aren't displaying those animals because of the latest holiday fashion trend. They are coordinators for the Angel Tree Project, and the purpose for their behavior



is to make this holiday season as happy as possible for special San Diego County kids who have experienced some pretty hard knocks in their young lives.

This program is coordinated with the Children's Services Bureau of the San Diego County Department of Social Services. The way it works is simple and effective in this worthwhile effort to get Christmas presents to children who otherwise might not receive any.

This is sponsored by Community Relations within Space Systems. Each department in the division will have its own coordinator to direct Angel Tree Project activities. They will give interested parties the names of the children and their holiday wishes along with directions where to take the gift after you've purchased it. The exact procedure depends on your work location. If you don't know the name of you coordinator, call Barb Oliver at extension 68888.

All presents must be brand new and unwrapped. The deadline to get your gift in is December 14.

Watch for flyers and posters with the latest information. This activity is one that reflects the true spirit of the holidays!

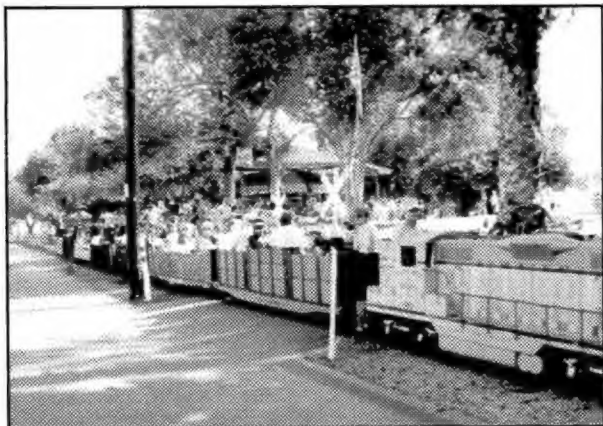


Showing off the pizzas to celebrate 500 days in Material and Processes without a single lost time accident are: (standing left to right) Mel Woods, Doug Cox, Susan Mirda, Melinda Dropik, Jenni Elion, Laurie Stoebe, Al Pendergrass, Kevin Giesy, Keith Hall, and Dave Kuhns; (kneeling left to right) Bill Reed and Chris Hudson.

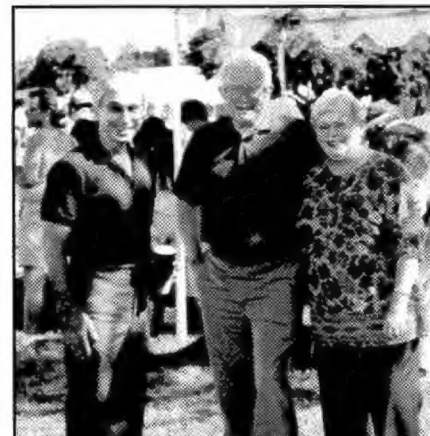
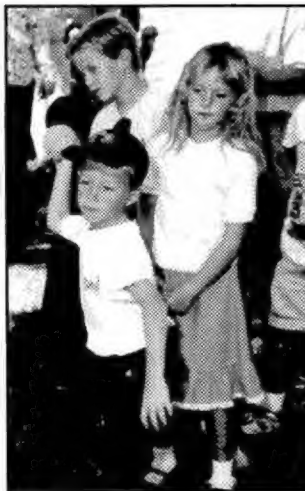
THE SPACE SY

CRA Missile Park was the place where Space Systems Division's *Family Recognition Day* took place on November 4, 1990.

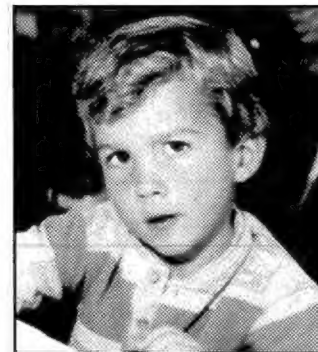
Over 7,500 folks of all sizes and ages descended on the place for an entire day of food, games, prizes, entertainment and a combination fiesta and picnic in a carnival atmosphere. It was *Our Day* and we made the most of it!



Who needs the Chatanooga Choo Choo? We have the good ol' Kearny Mesa & Pacific Railroad.



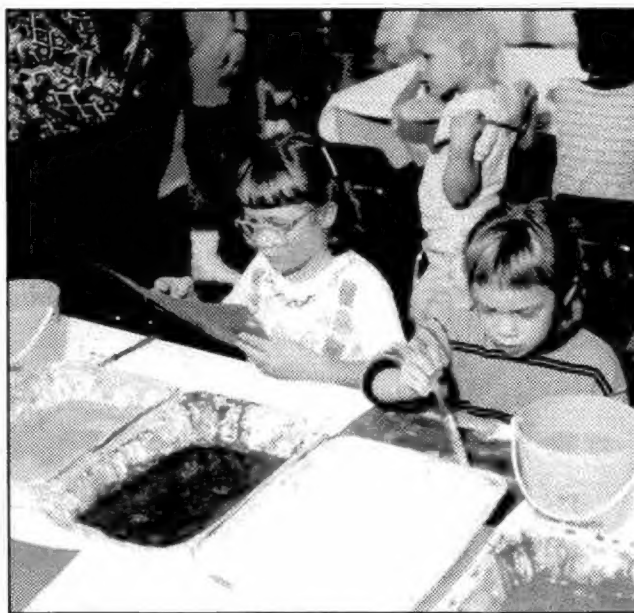
Bernie Kulchin (on the left) and Al and Kathy Lovelace enjoy the day.



"Hey, I'm not kidding. This is the latest style in hats!"



Fore!



Michelangelo, eat your heart out!

11/16/90

STEMS FAMILY *MADE IT HAPPEN!*



"That's really nice, but I wanted a butterfly!"



"Are you sure this is going to hang in the Louvre?"



"Let's take a break. The Chargers are playing!"



"Luck be good to me!"



The Punch 'n' Judy audience called for encores!

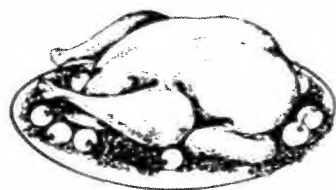


Chowhounds on the attack!

Inside Space . . .

Women's Opportunity Week was observed in the division during the week of October 15-19. It was a resounding success. The theme for this year's observance was *Today's Business Environment and You*. Five "brown bag" lunch seminars were scheduled for the week . . . the popularity of *Emigrant Trail* continues. So far a total of 50,340 copies of the book have been distributed to schools and universities . . . the San Diego GD Divisions' **Con-Trib Campaign** was an "unqualified success" according to **Brian Stevens**, director of the effort. \$1.5 million was raised for 1990-91. This was a 36% increase over last year. We even went \$300,000 over our goal! . . . Space Systems guys make up the great majority of the players on the GD-sponsored soccer team **Dynamic United**. They are only 2 points out of first place in the San Diego County Soccer League. Call **Kurt Weber** at 78383 for more information . . . **General Dynamics Corporation** is contributing to troop morale in Saudi Arabia by sending free copies of *U.S.A. Today* to the men and women serving in Operation Desert Shield . . . Space Systems' employment for the week ending November 2, 1990 was 4,742.

Orbiter to Observe Thanksgiving



In keeping with past holiday practices, the Orbiter will not be published on the week following Thanksgiving.

Happy Holiday!

Teaching Grants Given Top-Flight Educators

Through a special project called the *Teaching Excellence Grants Program*, Space Systems has recognized school teachers in the San Diego, Vandenberg AFB, and Cape Canaveral AFS areas to implement programs they wish to include in their curricula.

Elementary and secondary school teachers in the above mentioned areas were eligible for the competition. Two or more teachers could cooperate on a joint proposal. They submitted their projects and supporting documentation to the division through their principals.

In San Diego, a Santee elementary school teacher, was chosen as the overall winner. **Carin Moore** received a grant certificate and check for \$1,000 from **Bernie Kulchin**, vice president of Human Resources, during a ceremony at her school. Her students also received a copy of the book *Emigrant Trail*, posters, and "Let's Do Launch Bags" Her project is to implement a program designed to instruct students in newspaper publication.

Vandenberg made two awards, one for \$450 and another for \$350, to teachers in a hands-on science program of light and color, and a marine science project.

Two grants were awarded at Cape Canaveral. One, for \$800, will be used to set up both mathematical and science labs. The second was \$282 to begin play-writing and performance activities in which famous stories will be dramatized by students.

The money awarded may be used for classroom or laboratory materials, teaching aids (films videotapes, books, etc.), or field trips which are directly related to the courses being taught.



Carin Moore, a teacher at Rio Seco School in Santee, receives her Teaching Excellence Grant certificate and a check for \$1,000 from Bernie Kulchin, division vice president of Human Resources.

Holiday Dining and Dancing Abound in GDSS

San Diego — The Sheraton Harbor Island East is the scene for the Friday, December 7 holiday dinner and dance. A limited number of tickets will be on sale beginning November 16. Tickets are \$22 per person for NMA members and \$30 for nonmembers. Rooms at the hotel are \$75, and there will be a discount on tuxedo rentals. More information will be available on flyers and posters.

Elegant dining will be followed by Harvey & the 52nd Street Jive playing contemporary, rock and roll, pop and swing music.

A trip to Catalina Island will be raffled away as well as many more prizes. Free 5x7 photos, taken in a picturesque holiday setting, will be available to each couple/single party from 6:00 p.m. to 9:00 p.m.

Vandenberg Air Force Base — The holiday party is Saturday, December 15 at the Sheraton Royal Scandinavian Inn in Solvang. A four-piece band will play a mixture of 50's songs, new rock, Christmas music, and ball room tunes. Single or double occupancy room tickets are \$48.60. Dinner tickets are \$13.75.

Cape Canaveral Air Force Station — The CCAFS holiday party will be held Saturday, December 1 at the Cocoa Beach Holiday Inn. Music will be provided once more by "Tuxedo." Tickets for the event are on sale now and will continue to be available until November 27. Check flyers and posters for more details.